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ABSTRACT

A series of six papers and an introduction which present the results and tentative analyses of studies investigating such constructs as self-esteem, perceptions of control, and competence are included in this document. These papers are: (1) "Multiple Dimensions of Locus of Control and Their Relationship To Standardized Achievement Scores in Fifth Grade Children" (Lawrence W. Sherman, Richard J. Hofmann, and Patricia O'Meara); (2) "Self Concept of Musically Gifted and Non-gifted Adolescents In Regular and Special High Schools" (Lawrence W. Sherman, Richard J. Hofmann, and Mike Harrison); (3) "Multiple Dimensions of Self-concept and Locus of Control: Their Inter-relationships" (Lawrence W. Sherman, Richard J. Hofmann, and Jeanne Wagoner); (4) "Locus of Control and its Relationship to Self-esteem: A Developmental Association" (Lawrence W. Sherman and Richard J. Hofmann); (5) "A Reanalysis of the Factor Validity of the Coopersmith Child Self-Esteem Measure" (Richard J. Hofmann, Lawrence W. Sherman, and Brian Charleton); and (6) "Measuring Adolescent Self-Esteem: Construct Validity" (Richard J. Hofmann and Larry Sherman, and Ann Schmitt). Five pages of references for the studies are included. The appendix includes these study instruments: incomplete sentences, questionnaire for adolescents concerning feelings about themselves, the Piers-Harris Self-Concept Scale, and the Multi-dimensional Multi-attributional Causality Scale. (ABL)

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MULTI-FACETED DIMENSIONS OF SELF-CONCEPT AND PERSONAL CONTROL: A COLLECTION OF SIX RELATED STUDIES.

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INTRODUCTION

A growing number of researchers have recently been devoting their attention to investigating intro-personal perceptions of the self system (Harter, 1983) including such constructs as self-esteem, perceptions of control and competence. As an outgrowth of our earlier studies of the locus of control construct (Sherman & Hofmann, 1979; Hofmann, Klein & Steele, 1980; Sherman, 1984) and self-esteem (Schmitt, 1984) and the inter-relationship between these two constructs (Sherman & Hofmann, 1986), several adaptations to existing instruments of measurement have been investigated. Other researchers (Herbert Marsh and associated) are acknowledged to ave been examining these relationships as well. The present collection of papers is a preliminary attempt at presenting the results and tentative analyses of three studies, all of which were Master's degree projects or Specialist's degree theses. Mike Harrison's Specialist Thesis project examines multiple dimensions of sef-concept of four adolescent samples from musically gifted and regular populations from four high school band ensembles (n=266). Ms. Patricia O'Mera's Master's project investigates fifth graders' multiple causal attributions as they relate to verbal and mathematical ahievement scores in an elemntary school environent (n=89). Ms. Jeanne Wagoner's Specialist Thesis project attempted to relate both our measures of self-concept and causal attribution scales with each other in a sample of seventh through tenth graders (n=400). Ms. Ann Schmitt's Specialist Thesis examined Adolescent self esteem while Mr. Charleton's Specialist Thesis factor analyzed the Coopersmith Child Self-esteem Invenory. In addition to these five graduate student studies, Dr. Hofmann and I have also included a study of our own in which we examine some developmental trends associated with internal perceptions of locus of control.

The first three graduate student studies overlap each other in the sense that common instruments were used in each investigation. While each study examined a different issue, many of their references draw upon the same literature. Only one bibliography will be presented for all of the studies. For the sake of brevity this introduction will serve the purpose of describing both instruments which were used in each of the first three graduate students' studies. Causal attributions (locus of control) were measured with Lefcourt's et al (1979) Multi-dimensional Multi-attributional Causality Scale (MMCS). Self-concept was measured with an adaptation of the Piers-Harris Children's Self-Concept Scale (1983). While Mr. Harrison's study used our adaptation of the Piers-Harris and Ms. O'Mera's study used the MMCS, Ms. Wagoner's study examined the multi-dimensional relationships between both of these instruments. The following, then is a description of these two instruments.

INSTRUMENTS. Two frequently used measures, the MMCS (Lefcourt et al, 1979) and the Piers-Harris Self-Concept Scale (Piers & Harris, 1969; 1984) were used. Both of these instruments were modified for use in this study.

The Piers-Harris was modified to a Likert-type, five point scale which allows a respondent to answer with more variance than the simple

binary agree-disagree system normally used with this instrument. Hofmann & Gray (1978) have taken issue with the practice of factor analyzing binary items. Relying on their criticisms, we restructured the response format to a five choice Likert-like system. Respondents were asked to rate each of the 80 items from (1) "Always True" to (5) "Always False." This greater variance allows the observation of more subtle differences in responses and relationships among items. Self-concept is considered by many to be multidimensional with "different dimensions reflecting both the diversity of experience, attributes and capacity, and differential emphases in the process of abstraction" (Coopersmith, 1981, p. 21). The Piers-Harris Self-Concept Scale considers self-concept in relation to six factor-analytically derived dimensions (subscales): 1) Behavior, 2) Intellectual and School Status, 3) physical Appearance and attributes, 4) Anxiety, 5) popularity, ad 6) Happiness and Satisfaction. Table 1 displays the item numbers associated with each of te six subscales. Research has found support for the multidimensionality of self-concept and most agree that self-concept and self-perceptions are multidimensional (Byrne & Shavelson, 1986; Beane & Lipka, 1984).

Table 1
Item Structure of the Subscales of the Piers-Harris Self-Concept Scale.

SUBSCALES	Number of items	ITEM CODE #'S
BEHAVIOR	18	22,35,25,34,14,78, 76/80,12,48,31,56, 64,67,13,59,32,04
INTELLECTUAL AND SCHOOL STATUS	18	21,05,53,70,66/26, 30,42,11,49,16,07, 27,33,17,09,12,57
PHYSICAL APPEARANCE AND ATTRIBUTES	12	54,60,41,73,29,15, 63/08,27,49,55,57
ANXIETY	12	79,37,74,07,28/10, 40,06,08,20,44,55
POPULARITY	12	58,46,03,51,40/11, 01,49,33,77,57,69
HAPPINESS AND SATISFACTION	9	02,50,39,43,52/59, 08,38,36

The wording of the MMCS was slightly altered for use with children. The original target population of the scale was adults and wording changes were made to allow the instrument to be more easily understood by and congruent with the life experience of younger respondents. Lefcourt's et al (1979) Multi-dimensional Multi-attributional Causality Scale considers several attributional factors in the condition of perceived success or failure. Ability, Effort, Luck, and Difficulty are the four causal attributions used in arriving at an index of internal or external or a general measure of locus of control. Locus of control is not only multidimensional, but may vary for an individual depending on the context or situation in which they are asked to make causal attributions (eg., school

achievement or social affiliations). Their 48-item instrument then was designed to consider a 2 x 2 x 2 x 2 16-cell structure. Three items were constructed to represent each cell including achievement/Social affiliation contexts, Success/Failure situations, Stable (ability, difficulty)/Unstable (effort, luck) and Internal (ability, effort) and External (difficulty, luck) attributions. Each of the 48 items required that a respondent rate a statement from (1) "Always True" to (5) "Always False". Table 2 displays the item numbers (as appearing in the Lefcourt et al., 1979 article) associated with each cell.

Table 2
MMCS Item Structure.

LOCUS OF CONTROL	SUCCESS		FAILURE	
CONTEXT	STABLE	UNSTABLE	STABLE	UNSTABLE
INTERNAL ATTRIBUTIONS	ABILITY	EFFORT	ABILITY	EFFORT
ACHIEVEMENT				
ITEM #'S	11,27,43	9,25,41	3,19,35	1,17,33
AFFILIATION				
ITEM #'S	15,31,47	13,29,45	7,23,39	5,21,37
EXTERNAL ATTRIBUTIONS	CONTEXT/ DIFFICULTY	LUCK	CONTEXT/ DIFFICULTY	LUCK
ACHIEVEMENT				
ITEM #'S	6,22,38	8,24,40	14,30,46	16,32,48
AFFILIATION				
ITEM #'S	2,18,34	4,20,36	10,26,42	12,28,44

Note. The structure of Lefcourt's (1979) instrument, the Multi-dimensional Multi-attributional Causality Scale, is as follows. The 48 items are designed to take into consideration three items for each of 16 possible combinations including two contextual situations (Affiliation vs Achievement), two levels of success (Success vs Failure), two levels of stability (Stable vs Unstable), two levels of locus of control (Internal vs External), and four possible causal attributions (Ability vs Effort vs Context/Difficulty vs Luck).

RESULTS

Some preliminary results and conclusions overlap two of these studies. Therefore, rather than repeating certain of the analyses, we thought they would be presented in this introduction. They concern issues of reliability and validity of the Piers-Harris instrument which we altered by using the Likert-like 5-item response format. We computed each of the six subscales in te same fashion as suggested in the Piers-Harris manual. Coefficient-alpha was determined for each of the six subscales as well as the total score consisting of all 80 items. The subscales were then inter-correlated with each other. Our samples were then visually inspected comparing them to the original Piers-Harris manual data. These results are presented in Table 3. As can be seen in this table, all coefficient-alpha values from our data (both Wagoner's and Harrison's) exceed the values given in the

Piers-Harris manual. We thoroughly expected this to be so given our Likert format (the data obtained from the Piers-Harris manual was based on a binary response format). Thus, we felt confident that our adaptation of the response format did not sacrifice reliability for the instrument or its suggested subscales. In fact, our adaptation appears to have enhanced reliability throughout. As will be seen later in Wagoner's factor analysis of these 80 items, greater sensitivity to subscale determination was obtained from our data. While some of the items were quite congruent with the reported manual data, many items were deleted and new subscales were determined in our factor analyses of Wagoner's data, thus challenging the Piers-Harris manual suggested subscales. Harrison's study does not challenge but rather assumes and uses these subscale scores as dependent measures. While the O'Mera study obtained similar Piers-Harris Self Concept data, at this time we were unable to include them in these analyses. It is interesting to note that moderate but statistically significant ($p<.001$) correlations between grade point average (GPA) and BH ($r=.34$) and IS ($r=.36$) subscales as well as the Total score ($r=.22$) were obtained from Wagoner's data. Thus, as hypothesized by Marsh et al (1988) and others, stronger more positive self concepts appear to be positively associated with school achievement. While comparative data for Lefcourt's et al (1979) MMCS could be determined from the literature, we have not done this yet. Thus an analysis comparable to the preceeding one will not be made at this time, but we are working on it.

Lastly we would like to comment on our samples. Children between the ages of 8 and 16 are used throughout these studies. The school systems which participated in these studies volunteered their students. Elementary, Middle, Junior High and High Schools throughout Southwestern Ohio which were either private, parochial, or public were used. Some of the schools were determined because of the nature of the study (eg. Harrison's study needed special high school populations). Other school systems were simply willing to cooperate with us. We are greatfull for the cooperative spirit which all systems shared with us and would like to extend a special note of thanks to the following schools:

Colonel White High School, Dayton, Ohio
High School for the Performing Arts, Cincinnati, Ohio
McGuffey Laboratory School, Miami University, Oxford, Ohio
Middletown High School, Middletown, Ohio
Princeton Public Schools, Cincinnati, Ohio
Roger Bacon High School, Cincinnati, Ohio
Wyoming Public Schools, Wyoming, Ohio

With these preliminary results of both of the instruments used in these studies, we shall now proceed to a brief presentation of each study.

Table 3

Intercorrelations for Six Subscales and Total Score for Wagoner and Harrison Samples As Well As the Piers-Harris Manual Data.

	Subscales							
Subscales	BH	IS	PA	AN	PO	HP	TOTAL	Sample
Behavior	86							JW (n=400)
	82							MH (n=266)
	(81)a							
Intellectual and School Status	68	81						JW
	52	81						MH
	(51)	(78)						
Physical Appearance and Attributes	38	67	84					JW
	28	62	81					MH
	(21)	(59)	(76)					
Anxiety	35	51	56	83				JW
	25	53	56	84				MH
	(24)	(43)	(40)	(77)				
Popularity	32	52	72	65	79			JW
	24	52	68	65	77			MH
	(31)	(48)	(53)	(53)	(74)			
Happiness and Satisfaction	54	66	75	70	64	81		JW
	46	57	74	71	62	80		MH
	(28)	(28)	(53)	(58)	(45)	(73)		
Total	74	84	79	75	76	83	94	JW
	66	80	78	75	76	83	92	MH
	(67)	(78)	(70)	(68)	(72)	(63)	(90)	
	----Wagoner Data Only sex----							
	18	07	-12	-32	-06	-10	-06	
Race	-01	05	07	-08	-05	03	-01	
GPA	34	36	09	05	04	12	22	

Note. Internal consistency coefficient-alpha estimates appear in the diagonal cells. All decimal points have been excluded from the table. Coefficients greater than .16 are statistically significant ($p<.001$).

a Coefficients in parentheses are reproduced from Piers-Harris (1984, p. 67) table for comparative purposes.

Multiple Dimensions of Locus of Control and Their Relationship to Standardized Achievement Scores in Fifth Grade Children.[1]

LAWRENCE W. SHERMAN, RICHARD J. HOFMANN, & PATRICIA O'MEARA, Department of Educational Psychology, Miami University, Oxford, Ohio.

ABSTRACT. Multiple dimensions of causal attributions among students (n=94) in four fifth grade classrooms were examined with respect to their relationships to standardized achievement test scores. A modified version of the Multidimensional Multiattributional Causality Scale was administered and used to determine internal (ability/effort) and external (difficulty/luck) locus of control perceptions in the context of achievement and within either the situation of success or failure. Over- and under-achievers' as well as regular achievers' locus of control scores are contrasted with each other using several 1-way ANOVA designs. The results are discussed and explained within the context of Covington's (1984) self worth theory which predicts internal perceptions being associated with achieving and over-achieving students' scores while under-achieving students' scores should be associated with external perceptions.

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[1] A paper presentation to the MWERA annual meetings, Chicago, Illinois, October 14, 1988. The development and preparation of this paper was supported by the Dean of the School of Education and Allied Professions. Special thanks are due the Wyoming City Schools, Wyoming, Ohio. This paper was in partial fulfillment of the degree Master's in Education, Miami University, Oxford, Ohio, conferred in August, 1988. A special note of thanks is due the Wyoming City Public Schools for their willingness to participate in this study. Requests for reprints should be sent to Lawrence W. Sherman, Department of Educational Psychology, Miami University, Oxford, Ohio 45056.

MULTIPLE DIMENSIONS OF LOCUS OF CONTROL AND THEIR RELATIONSHIP TO STANDARDIZED ACHIEVEMENT SCORES IN FIFTH GRADE CHILDREN.

Recent interest in children's perceptions of personal competences (internal locus of control) and their relationship to achievement behaviors suggest a strong association (Sherman & Hofmann, 1980; Harter, 1983; Marsh, 1984). theoretically, Covington's (1984) "self worth theory," also described as the "egotism hypothesis," predicts that internal perceptions of control would be strongly associated with academic achievement. This relationship has been examined by Marsh (1984) who suggests a complex and multi-dimensional relationship. Most of Marsh's studies have focused primarily on Australian populations. Only a few researchers have attempted an examination of the complex multi-dimensional relationships, but all suggest a variety of further research approaches. Explanations of incompatible findings in these relationships have sometimes focused on instrumentation: eg., either the locus of control scales or the achievement measures (Sherman & Hofmann, 1980; Sherman, 1984), as well as the contextual or situational factors (Marsh & Shavelson, 1985).

The primary objective of the present study is to examine the relationship between causal attributions and achievement by using a more refined and focused measure of causal attributions in an American sample. Lefcourt's (1976) earlier descriptions of the locus of control construct lead him to develop a complex multi-dimensional scale which attempts to measure various causal attribution perceptions in adults. This instrument, The Multidimensional Multiattributional Causality Scale (MMCS) has not been used with samples of young children. An adaptation of the MMCS has been accomplished by changing the language to reflect children's concerns and life spaces. The study is an attempt at predictive validity. If earlier predictions of an association between internal perceptions and achievement behaviors are confirmed, then Harter's (1983) and Covington's (1984) Self worth theory will be strengthened.

METHOD

SAMPLE. Fifth grade children (n=94) from four classrooms (n's = 22, 29, 22 and 21 respectively) from a small midwestern, suburban, predominantly middle-class school district comprised the sample for this study. The sample represents the all fifth graders in this school district.

INSTRUMENTATION.

MMCS. The scale used to measure children's locus of control was an adapted version of Lefcourt et al's (1979) Multidimensional Multiattributional Causality Scale (MMCS). The original scale was developed for use with adults. Some of the language was changed to reflect the younger child's life-space. The MMCS consists of 48 5-point (strongly agree to strongly disagree) Likert-like items of which 24 items probe perceptions within the context of school achievement and the other 24 reflect social affiliation. The school achievement items refer to general rather than specific curricular/topic areas. Only the 24 school achievement attribution

items were used in this study. In addition 12 of the items are concerned with success and 12 reflect failure within each context. Also, within success or failure situations 3 items each reflect the internal attributes of ability (3 items) and effort (3 items) as well as the external attributes of difficulty (3 items) and luck (3 items). Separate internal and external scores within or across success and failure conditions may be computed. Also, responses to each of the 3-item clusters representing ability, effort, difficulty and luck can be computed.

The responses to the items ranged from "always true," which was given a value of one (1), to "always false," which was given a value of five (5). A conversion was done to reverse these values to coincide with the Lefcourt scale which originally is 1 (disagree) to 5 (agree). Scores for an individual cell of the original matrix (See Table 2 in the introduction) ranged from 3 (1 x 3 items) to 15 (5 x 3 items). Following Chandler et al. (1981) two general and four specific dependent variables were computed. A "G-SCORE," general score for internality, was obtained by summing the attributions for the ability and effort cells (both internal) and subtracting the scores for difficulty and luck, the external cells. Thus, negative (-) scores would indicate "externality" and positive scores "internality." An "S-SCORE," stability score, was calculated as the difference between the stable attributes of ability and difficulty cells minus the unstable attributes of effort and luck cells. Thus, positive (+) would indicate greater "stability" and negative scores should indicate relative "unstable" attributes. In addition separate INTERNAL (ability + effort cells), EXTERNAL (difficulty + luck cells), STABLE (ability + difficulty cells) and UNSTABLE (effort + luck cells) scores were computed.

ERB. Standardized achievement measures were obtained through the use of ERB Comprehensive Testing Program, Version II, Level 3, Form D (ERB, 1982; Mitchell, 1985). Six subscales from the ERG were used in the study. Two subscales indicate either verbal or quantitative aptitude. Four additional subscales represent achievement in 1) vocabulary, 2) verbal comprehension, 3) mathematical concepts, and 4) mathematical computation. All six ERB measures were independently transformed into standardized z-scores for our sample. Achievement status categories were then defined by contrasting either the verbal or the quantitative aptitude z-scores with the two associated achievement score subscales respectively. Under-achievers (U-Ach) were defined as those who had relatively lower achievement scores than their aptitudes scores would have predicted. Over-achievers (O-Ach) were defined as those whose achievement scores were relatively higher than their aptitude scores would have predicted. Normal-achievers (N-Ach) were defined as those whose aptitude scores reflected their achievement scores.

DESIGN AND ANALYSES. The data were analyzed using simple 1-way ANOVA statistics where achievement status groups (U-Ach, N-Ach and O-Ach) is the independent variable and each of the MMCS subscale scores including the G-Index, S-Index, Internal, External, Stable and Unstable function as separate dependent variables for each analysis. In addition separate analyses were done for quantitative

(mathematical) aptitude/achievement measures and verbal aptitude/achievement measures. Post-hoc contrasts tested hypotheses predicting that internal perceptions are significantly greater in the N-Ach and O-Ach groups and external perceptions are greater in the U-Ach group.

RESULTS

The results are presented in six tables (Tables 3 to 8). Our first analysis consists of an inter-correlation matrix of the aptitude and achievement subscales of the ERB scores. This is presented in Table 4. It is obvious that all the achievement subscales are substantially correlated with the two aptitude subscales. This, in itself, might be interpreted as predictive validity for the ERB test. However, since each of the subscales and the aptitude scales are so strongly inter-related, a question of construct validity might arise: eg., does the same test really test aptitude or achievement? Nevertheless, if we accept the two aptitude scores as such, then they should be predictive of achievement measures.

Table 4
Inter-correlations of ERB scores (n=89).

ERB Subscale Scores	ERB Subscale Scores 1	2	3	4	5	6
Aptitude						
1. Verbal	1.00					
2. Quantitative	.60	1.00				
Achievement						
3. Vocabulary	.71	.56	1.00			
4. Reading Comp.	.49	.37	.54	1.00		
5. Math Concepts	.59	.74	.63	.47	1.00	
6. Math Computation	.59	.74	.48	.36	.73	1.00
Means	489	493	328	334	334	333
S.Ds.	12	12	12	17	11	12

The next procedure in our study was to compute the difference between each of the aptitude scores (Verbal and Quantitative aptitude) and their respective achievement scores. These four difference scores were then transformed into standardized z-scores. The top and bottom 16% of these scores were then collapsed to form our under-achieving (U-Ach) and over-achieving (O-Ach) groups, and the middle 68% were designated normal achievers (N-Ach). Table 5 presents the mean

z-scores for each of these four difference scores for our three achievement status groups. Four 1-way ANOVAs were performed on these data to assure us that we had indeed separated subjects into extreme groups. Each of these ANOVAs were statistically significant ($p<.001$).

Table 5
Mean Differences Between Aptitude and Achievement z-scores by Average (N-Ach) Over (O-Ach), and Under (U-Ach) Achieving Students (n=89).

Achievement Status	Contrast			
	Verbal-Voc.	Verbal-Read	Quant-Conc	Quant-Comp
N-Ach	-0.05 (63)	0.03 (60)	0.01 (59)	0.02 (59)
O-Ach	-0.69 (12)	-1.59 (13)	-1.10 (15)	-1.06 (15)
U-Ach	1.12 (14)	1.29 (16)	1.09 (15)	1.06 (15)
F(2,80)=	41.73	21.60	176.97	95.75
p<	.001	.001	.001	.001

Thus, in computing our three achievement status groups (U-Ach, N-Ach and O-Ach), four separate contextual differentiations were made. Either aptitude measure (Verbal or Quantitative) was contrasted with the two achievement scores associated with it: eg., Verbal aptitude - Vocabulary Achievement (Table 6), Verbal aptitude - Reading Comprehension (Table 7), Quantitative Aptitude - Math Computation (Table 8) and Quantitative Aptitude - Math Concepts (Table 9). Six specific Attribution subscales were used as dependent variables which were each contrasted among the three achievement status groups for each aptitude/achievement context. While none of the 24 statistical contrasts approached statistical significance ($p<.05$), many of them obtained trends in the hypothesized direction. Each of these for separate analyses follows.

VERBAL APTITUDE - VOCABULARY. As can be seen in Table 6 none of the six 1-way ANOVAs were statistically significant ($p>.05$). When Verbal aptitude was contrasted with vocabulary achievement to produce our three achievement status groups, vertually no significant difference was obtained on our G-Index of Internality. It might be noted that subjects in all three groups tend to perceive themselves more internally (a negative score on the G-Index would indicate a tendency towards externality, a score of zero (0) would indicate a balance between the two Internal/External locus of control extremes). With regard to verbal aptitude and vocabulary achievement status groups, our results appear to be running counter to our predicted trends. U-Ach children tended to perceive themselves as more internal (attributions of Ability and Effort), than the other two groups. However, as predicted, the U-Ach group obtained the highest external score (attributions of Difficulty and Luck), and the O-Ach group obtained the lowest external score. Our general stability index (S-Index) was quite similar in all three groups, with a general tendency among all children towards the Unstable end of the continuum (as in the G-Index positive scores indicate stable attributions,

negative scores indicate unstable attributions, and scores near zero would indicate a balance between the two extremes). The O-Ach group obtained the lowest stable score (attributions of Ability and Difficulty). Unexpectedly the U-Ach group obtained the highest unstable score (attributions of Effort and Luck).

Table 6
Mean Attribution Subscale Scores By Achievement Status Groups: Verbal Aptitude minus Vocabulary.

Attribution Subscales	Achievement Status Groups N-Ach	O-Ach	U-Ach	F(2,80) *
G-Index	6.86	6.67	6.86	0.06
Internal	38.35	37.17	39.07	0.51
External	31.49	30.50	32.21	0.33
S-Index	-1.21	-2.33	-0.29	0.51
Stable	34.32	32.67	35.50	1.04
Unstable	35.52	35.00	35.79	0.19

* $F(2,80) = 2.33$, $p<.10$.

VERBAL APTITUDE - READING COMPREHENSION. As can be seen in Table 7 none of the six 1-way ANOVAs were statistically significant ($p>.05$). When Verbal aptitude was contrasted with reading comprehension achievement to produce our three achievement status groups, vertually no significant difference was obtained on our G-Index. Once again, it might be noted that subjects in all three groups tend to perceive themselves more internally (a negative score on the G-Index would indicate a tendency towards externality, a score of zero (0) would indicate a balance between the two Internal/External locus of control extremes). Nevertheless, as predicted the U-Ach group did have the lowest scores on this index while the N-Ach group had the highest. However our O-Ach group had the lowest Internal scores and our N-Ach the highest. The U-Ach group obtained the highest External score (attributions of Difficulty and Luck), and the O-Ach group obtained the lowest external score, thus conforming to our predictions. Our general stability index (S-Index) obtained a general tendency among all children towards the Unstable end of the continuum. The U-Ach group obtained the lowest stable score (attributions of Ability and Difficulty). The N-Ach group had the highest Stable score and the U-Ach group had the highest Unstable score.

Table 7
Mean Attribution Subscale Scores By Achievement Status Groups: Verbal Aptitude minus Reading Comprehension Achievement Scores.

Attribution Subscales	Achievement Status Groups N-Ach	O-Ach	U-Ach	F(2,80) *
G-Index	7.52	5.92	5.00	1.60
Internal	38.88	36.92	37.25	1.54
External	31.37	31.00	32.25	0.37
S-Index	-0.55	-2.07	-3.00	1.76
Stable	34.85	32.92	33.25	1.19
Unstable	35.40	35.00	36.25	0.22

* $F(2,80) = 2.33$, $p<.10$.

QUANTITATIVE APTITUDE - MATHEMATICAL CONCEPTS. As can be seen in Table 8 none of the six 1-way ANOVAs were statistically significant ($p>.05$). When quantitative aptitude was contrasted with the mathematical concepts achievement scores to produce our three achievement status groups, vertually no significant difference was obtained on our G-Index. Again, all three groups tend to perceive themselves more internally (a negative score on the G-Index would indicate a tendency towards externality, a score of zero (0) would indicate a balance between the two Internal/External locus of control extremes). The N-Ach group tended to perceive themselves as more internal (attributions of Ability and Effort), than the other two groups, and, as expected, the U-Ach group obtained the lowest score on this Index. As predicted, the U-Ach group obtained the highest external score (attributions of Difficulty and Luck). Our general stability Index (S-Index) was quite similar in all three groups, with a general tendency among all children towards the Unstable end of the continuum with the N-Ach group obtaining the lowest score and the O-Ach and U-Ach groups being almost equal and highest. The N-Ach group obtained the highest Stable score . All three groups appeared equal in their Unstable scores.

Table 8
Mean Attribution Subscale Scores By Achievement Status Groups: Quantitative Aptitude minus Math Concepts.

Attribution Subscales	Achievement Status Groups N-Ach	O-Ach	N-Ach	F(2,80) *
G-Index	7.68	5.67	4.67	1.29
Internal	38.90	37.40	36.87	1.26
External	31.22	31.73	32.00	0.26
S-Index	-0.83	-1.93	-2.00	0.22
Stable	34.64	33.60	33.53	0.27
Unstable	35.48	35.53	35.53	0.02

* $F(2,80) = 2.33$, $p<.10$.

QUANTITATIVE APTITUDE - MATHEMATICAL COMPUTATION. As can be seen in Table 9 none of the six 1-way ANOVAs were statistically significant ($p>.05$). When Quantitative aptitude was contrasted with mathematical computation achievement to produce our three achievement status groups, no significant difference was obtained on our G-Index. Subjects in all three groups tend to perceive themselves more internally. O-Ach children tended to perceive themselves as more internal than the other two groups. However, the N-Ach group obtained the highest external score. With regard to our general stability index (S-Index) the O-Ach group had the lowest score with the other two groups being quite similar, with the overall tendency among all groups being towards the Unstable end of the continuum. The O-Ach group obtained the lowest stable score. The U-Ach group obtained the lowest unstable score.

Table 9
Mean Attribution Subscale Scores By Achievement Status Groups: Quantitative Aptitude minus Math Computation.

Attribution Subscales	Achievement Status Groups N-Ach	O-Ach	U-Ach	F(2,80) *
G-Index	6.37	8.93	6.53	1.41
Internal	38.19	39.60	37.47	1.09
External	31.81	30.67	30.93	0.62
S-Index	-0.92	-3.07	-0.53	0.80
Stable	34.54	33.60	33.93	0.37
Unstable	35.46	36.67	34.47	0.56

* $F(2,80) = 2.33$, $p<.10$.

In Summary, the general trend for our G-Index among all three achievement groups, regardless of which context we used, was towards the positive end of the continuum indicating general perceptions for internal attributions. Our general Stability measure (S-Index) also obtained an overall trend towards the Unstable end of the continuum. We obtained mixed trends for the specific Internal, External, Stable and Unstable measures across the four achievement contexts.

Conclusions

While this study did not obtain any statistically significant evidence, we believe some of the analyses did demonstrate partial but weak support for our hypotheses. General trends in our data favor an overall internal locus of control for our middle-class sample. Perhaps the homogeneity of this sample contributed to this tendency towards attributions of ability and effort. This was so for our general stability index as well, showing a tendency for effort and luck to be primary attribution perceptions among our sample. We expected to find our under-achieving sample to reveal the most External attributions and did obtain this in three of the four analyses. Likewise, we expected this same sample to obtain the lowest Internal scores and also obtained this in three of the four analyses. We suggest, then, that these findings partially support Covington's (1984) "ego hypothesis," the self worth theory, as well as Waterman's (1984) explanation. The significance of this study represents construct validation of the self worth motive (Covington, 1984). Classroom practices which promote the healthy development of internal perceptions of personal causality is one important implication of this study.

Two important issues are related to why we did not obtain statistically significant results. Both deal with the ERB aptitude/achievement measure which we used to determine our achievement status groups. First, since all the achievement subscales were so strongly related to each other, and the two aptitude subscales were also strongly related to each other, there may certainly be a question as to whether these subscale scores were effective in differentiating our achievement status groups. Perhaps the ERB is not really an aptitude, but rather an achievement test. Second, as in our earlier study (Sherman & Hofmann, 1979) where we defined "continuing achievement" (teacher determined achievement: ie., classroom grades) and "momentary achievement" (standardized achievement test scores) measures and their differential influence on children's locus of control perceptions, we still believe the weaker relationship between momentary achievement and locus of control to be expected. The ERB scores were obtained during the Spring of the proceeding year, before these children entered the fifth grade. Both the distance in time between when the ERB and MMCS tests were administered and the questionable use of the ERB to determine our achievement status groups may have contributed to the lack of statistical significance in our study. Future examination of the relationship between attribution perceptions and achievement status should consider alternative ways of determining under- over- and normal-achieving children. We would suggest the use of classroom grades and standardized aptitude tests to determine the achievement status groups.

Perhaps an additional problem of our study is related to the MMCS as well. Herbert Marsh's several studies examining models of the multi-dimensional relationship between self-concept and achievement are relevant to a discussion of multi-dimensional attributions and achievement. In his latest published study (Marsh et al., 1988), situational specificity is recommended in the self-concept survey items: eg., the self-concept items should directly refer to either a verbal or quantitative (mathematics) context, rather than "general" school achievement. This may be true of causal attribution scales as well. Therefore, future studies might attempt to construct survey items representing a variety of curriculum content to which a student might make attributional responses.

Self-concept of Musically Gifted and Non-gifted Adolescents In Regular and Special High Schools.[1]

LAWRENCE W. SHERMAN, RICHARD J. HOFMANN & MIKE HARRISON, Department of Educational Psychology, Miami University, Oxford, Ohio.

ABSTRACT. Differences in Self-concept of musically gifted and average adolescents enrolled in either two homogeneous high schools for the performing arts or two heterogeneous normal high school environments were examined. Students (n=262) in concert bands were administered a modified version of The Piers-Harris Children's Self-Concept Scale near the end of their Spring semester. Six dependent variables representing multi-dimensional facets of self-concept were contrasted with the independent variables of environment (gifted vs normal high schools) and seating position (principals vs other seating positions) using a three-way within and between subjects ANOVA design. A statistically significant ($p<.05$) interaction was obtained between the subjects seating position and their environment revealing that in the gifted environment principal players had more positive self-concepts than their peers occupying lesser positions. This same contrast in the normal high schools obtained no significant difference. Students occupying lesser positions in the gifted environment had significantly lower self-concept scores than their counterparts in the normal environments. Festinger's (1954) social comparison theory is used to explain these results. The psychological advantages and disadvantages of special programs for the musically gifted are discussed.

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[1] The development and preparation of this paper was supported by the Dean of the School of Education and Allied Professions. This study was in partial fulfillment of Mr. Harrison's Specialist Degree in School Psychology. Mr. Harrison is a School Psychologist for the Beaver Creek Public Schools, Beaver Creek, Ohio. A special note of thanks is due the concert band ensembles of Colonel White High School (Dayton, Ohio), Middletown High School (Middletown, Ohio), Roger Bacon High School (Cincinnati, Ohio) and the High School for the Performing Arts (Cincinnati, Ohio). Requests for reprints should be sent to Lawrence W. Sherman, Department of Educational Psychology, Miami University, Oxford, Ohio 45056.

SELF-CONCEPT OF MUSICALLY GIFTED AND NON-GIFTED ADOLESCENTS IN REGULAR AND SPECIAL HIGH SCHOOLS.

Self-concept has been theorized to be a function of the environmental context within which one finds themselves. Some would suggest that the answer to the question, "How good do you feel about your self?" rests on another question, "Compared to what?" Rogers et al., (1978) and Strang et al., (1978) have presented evidence supporting Festinger's (1954) social comparison theory, suggesting the importance of the second question, "Compared to what?" Self-concept, it is assumed, is a function of inter-personal social interactions which provide feedback about the self. Lippitt (1962) has described this as the "circular interpersonal process." Coleman et al's (1978) earlier research on "mainstreamed" developmentally handicapped special populations supported Festinger's (1954) social comparison theory. Self-concept was demonstrated to be a function of the environments which the children had available to compare themselves to. He and his colleagues (Coleman & Fults, 1982 & 1985) later demonstrated the power of social comparison theory in predicting self-concept perceptions at the other end of the continuum of special education, the academically gifted child. The self-concept instrument which was used throughout these studies was the Piers-Harris Children's Self-Concept Scale (Piers & Harris, 1969). This instrument suggests 6 cluster scores as well as a total score (Piers, 1983). The cluster scores were derived from exploratory factor analysis of 80 binary items which comprise the scale. Thus, multiple dimensions of self-concept have been previously analyzed in special populations (developmentally handicapped and academically gifted) who have been found to behave as Festinger's (1954) social comparison theory would predict.

Festinger (1984) hypothesizes that the social comparison process is much stronger in highly competitive environments. Tracking, the process of organizing school activities through so-called homogeneous ability grouping, may have an affect upon children's self-concepts. One type of ability grouping is the magnet school. Many urban school systems have used special magnet schools as a way of desegregation. The high school for the performing arts is an example of a special homogeneous type of grouping which some urban school systems have implemented. Only the most gifted and talented are admitted into these institutions. Getting in the front door is competitive and finding your place in a performing ensemble is likewise highly competitive. One might ask the question, "What are the effects of ability grouping on children's self-concepts?" This study examines and contrasts the similarities and differences between musically gifted/talented adolescents in homogeneous (performing arts) and heterogeneous (normal) high school students in instrumental ensembles (concert bands).

METHOD

SAMPLE. adolescents (n=262) from four urban high schools, two of which were special "high schools for the performing arts," each in a different city located in south-western and central western Ohio. Admission to these special high schools was primarily based on talent or "gift". The other two high schools were likewise from similar and

matched urban areas, however they were "normal" high schools, heterogeneous with regard to a broad range of abilities. Concert band members from each of the schools were the primary sample for the study. Band members play instrumental parts (eg. 1st, 2nd or 3rd trumpet) and occupy seats (eg., first seat, 1st trumpet, also described as the "principal trumpet") based on their talent. The concert band environment is a somewhat competitive one, regardless of whether it is a normal or special high school for the performing arts. For the purpose of this study it was assumed that the most talented players were placed on the principal seats of each instrument part.

INSTRUMENTS. Self-concept was measured with a modified version of the Piers-Harris Children's Self-Concept Scale (P-HCSS) (Piers & Harris, 1969). The original scale demands binary "yes/no" responses to 80 declarative statements. We modified the response pattern to a 5-point, Likert-like, "strongly agree" to "strongly disagree" format. This modification was used so that a more proper analysis (factor analysis) could be accomplished in a later study. Earlier criticism (Hofmann & Gray, 19??) has indicated that factor analysis of binary data is inappropriate. Manual instructions (Piers, 1983) suggest a total score as well as 6 subscale scores each representing different facets of self-concept. High scores indicate positive or strong self-concept while low scores indicate negative or weak self-concept.

DESIGN AND ANALYSIS. Seven 2-way ANOVA design was used to analyze the students self-concept scores (each of six subscale clusters and total scale score were used as separate dependent variables) by status (principal players vs others) by environment (special vs normal high school). Post-hoc contrasts of cell means were accomplished using Duncan's Multiple Range Tests of simple main effects; Fisher's LSD was used for significant interactions.

RESULTS

The results are presented in Table 10. The upper part of this table presents the means for each subscale of the Piers-Harris Self-Concept Scale and the bottom part presents the 2-way ANOVA results where each of these subscales were used as dependent measures for instrument seat (status: principals vs all other seats) by environment (homogeneous talented schools and normal schools). Two of the subscales (BH and IS) and the total composite (CP) score obtained significant 2-way interactions. For the BH and IS subscales and the total CP score, Principal players in the talented high schools had significantly stronger Self-Concepts than players in lesser seats in their own school environments, as well as the normal high school environments. Their BH and IS subscale scores, as well as the total CP scores, were even stronger than the Principals in the normal high schools. It is interesting to note that in the talented environments, students occupying positions lesser than the Principals had the lowest Self-Concepts of all, even lower than their counterparts in the regular high schools. The PA subscale obtained a significant main effect for seating status indicating that Principal players, those occupying the first seat, had significantly stronger Self-Concepts than their counterparts in lesser seats.

Table 10

Means and Seven Two-way ANOVAS of Environment by Seats for Entire Sample

Environments Seats/School	n	Subscales BH	IS	PA	AN	PO	HS	CP
Principals								
Gifted	24	64.79	66.83	49.00	52.04	43.71	39.58	305.04
Regular	53	59.75	61.94	47.15	50.32	42.64	38.28	290.23
Other Seats								
Gifted	39	59.90	60.59	45.23	48.69	41.23	37.69	283.10
Regular	146	60.12	61.54	45.02	48.37	41.60	37.13	285.23
Entire Sample								
Means		60.43	61.97	45.85	49.15	41.95	37.67	287.74
SD		8.46	8.31	7.04	8.41	6.58	5.64	30.48
		---two-way anova's main---						
Effect								
Status MS		220.84	474.80	374.15	301.99	133.44	99.60	7801.52
F(1,258)		3.14	7.06	7.72*	4.31*	3.08	3.15	8.63
School MS		249.53	166.76	45.50	44.88	5.29	37.29	1731.59
F(1,258)		3.55	2.48	0.94	0.64	0.12	1.18	1.92
St x Sch MS		296.96	366.79	28.87	21.02	22.04	5.86	3084.34
MS error		70.36	67.23	48.47	70.09	43.29	31.63	903.79
F(1,258)		4.22*	5.46*	0.60	0.30	0.51	0.19	3.41*

Note: BH=Behavior (18 items), IS=Intellectual and School Status (18 items), AN=Anxiety (12 items), PO=Popularity (12 items), PA=Physical Appearance and Attributes (12 items), HS=Happiness and Satisfaction (9 items), CP=Composite (all 80 items), MS=Mean Square.

* $p<.05$.

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CONCLUSIONS

Differences in Self-concept of musically gifted and average adolescents enrolled in either two homogeneous high schools for the performing arts or two heterogeneous normal high school environments were examined. Students in concert bands were administered a modified version of The Piers-Harris Children's Self-Concept Scale. Six dependent variables representing multidimensional facets of self-concept were contrasted with the independent variables of environment (gifted vs normal high schools) and seating position (principals vs other seating positions) using a two-way between subjects ANOVA design. Statistically significant ($p<.05$) interactions were obtained between the subjects seating position and their environment revealing that in the gifted environment principal players had more positive self-concepts than their peers occupying lesser positions. This same contrast in the normal high schools obtained no significant difference. Students occupying lesser positions in the gifted environment had lower self-concept scores than their counterparts in the normal environments. Festinger's (1954) social comparison theory would predict these results.

The psychological advantages and disadvantages of special programs for the musically gifted are one important consideration in examining these results. Tracking, or "ability grouping," whether within classrooms or between schools, has recently come under attack (Oakes, 1987). Special schools for special gifts have certain risks with regard to students' mental health. While all students in the gifted and talented high schools are assumed to be talented, only a few are occupying the principal positions in these ensembles. Those who do not sit in the Principal positions, even though they may be relatively as talented as others, suffer in their weak perceptions of themselves. In a more heterogeneous environment their talents might be used more advantageously than they appear to be in the homogeneous environment. This is one quite expected outcome from Festinger's theory of social comparison. In highly competitive environments, people will develop a self-concept which reflects the hierarchy of status available with which to compare one's self. All of these high school bands determined the principal seats through a system of auditions and challenges. However, the talented programs appear to be having the strongest effect on self-images of students occupying lesser but certainly highly important positions in the ensembles we studied. The directors of these ensembles, if aware of the potentially damaging effects of this situation might attempt various approaches to alleviating this effect. Another interpretation of these findings might also indicate that strong self-concepts might be more associated with principal players who must perform in a solo format many times. Perhaps their confidence allows them to give better performances]. However, we think this would be so in the normal high school as well, but we did not find this to be so, except with regard to the Personal Attributes (PA) subscale.

Multiple Dimensions of Self-concept and Locus of Control: Their Inter-relationships.[1]

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ABSTRACT. This exploratory study examines the multidimensional relationships among adolescents' perceptions of self-concept and attributions of personal causality. Nearly 400 subjects between the ages of 12 and 16 were administered modified versions of The Piers-Harris Children's Self-concept Scale and the Multidimensional Multiattributional Causality Scale. Subscales within each instrument were independently determined through exploratory factor analysis. The subscales were then factor analyzed and the results used to describe the complex relationships among perceptions of self-concept and causal attributions. The results are discussed, explained and, in general, confirm Covington's (1984) self worth theory.

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MULTIPLE DIMENSIONS OF SELF-CONCEPT AND LOCUS OF CONTROL:
THEIR INTER-RELATIONSHIPS.

Recent interest in the relationship between children's intra-personal perceptions of self-concept and locus of control (eg., Covington, 1984; Harter, 1983; Marsh, 1984; Waterman, 1984, and many others) have focused on the importance of this association to motives for academic achievement. Self-concept is usually considered to exist and measured on a relative continuum from strong/positive to weak/negative. Locus of control is usually considered to exist and measured on a relative continuum from internal to external perceptions. Both Harter (1983) and Marsh (1984) indicate that both of these constructs, self-concept and locus of control, are multi-faceted. Several instruments capable of measuring both constructs from a multi-faceted point of view are available and have a history of use in the psychological literature. Nevertheless, both Harter and Marsh and others have developed new instruments to measure the multidimensional nature of these constructs. One might question whether or not some of the earlier instruments are yet capable of measuring these complex constructs? Using some more recent quantitative analytic procedures on historically accepted instruments might confirm the instruments' contemporary value. Also, using these historically accepted instruments in the present might provide some continuity with earlier research.

Covington's (1984) self worth motive, also described as the "egotism hypothesis," has received considerable attention as one theory which explains the relationship between self-concept and locus of control. This theory predicts that multiple dimensions of locus of control perceptions will be strongly associated with multiple dimensions of self-concept: internal locus of control and positive self-concept at one end of the continuum and external locus of control and negative self-concept at the other end. One of the primary objectives of the present study is to explore the complex inter-relationships between locus of control and self-concept and confirm this prediction.

METHOD

SAMPLE. Seventh- through tenth-grade children (n=398) from several Junior High and High School classrooms from a small midwestern, suburban, predominantly middle-class school district comprised the sample for this study. The sample represents an ethnically integrated school district (nearly 20% of the students were Black). The subjects ranged in age from 12 (7th-graders) to 16 (10th-graders) years old.

INSTRUMENTATION. Self-concept was measured with a modified version of the Piers-Harris Children's Self-Concept Scale (P-HCSS) (Piers & Harris, 1969). The original scale demands binary "yes/no" responses to 80 declarative statements. We modified the response pattern to a 5-point, Likert-like, "strongly agree" to "strongly disagree" format. This modification was used so that a more proper analysis (factor analysis) could accomplished. Earlier criticism (Hofmann & Gray, 1978) has indicated that factor analysis of binary

data is inappropriate. Manual instructions (Piers, 1983) suggest a total score as well as 6 subscale scores each representing different facets of self-concept. High scores indicate positive or strong self-concept while low scores indicate negative or weak self-concept.

The scale used to measure children's locus of control was an adapted version of Lefcourt et al's (1979) Multidimensional Multiattributional Causality Scale (MMCS). The original scale was developed for use with adults. Some of the language was changed to reflect the younger adolescent life-space. The MMCS consists of 48 5-point (strongly agree to strongly disagree) Likert-like items of which 24 items probe perceptions within the context of school "achievement" and the other 24 reflect social "affiliation." In addition, 12 of the items are concerned with success and 12 reflect failure within each context. Also, within success or failure situations 3 items each reflect the internal attributes of ability@(3 items) and effort (3 items) as well as the external attributes of difficulty (3 items) and luck (3 items). Separate internal and external scores within or across success and failure conditions may be computed. Also, responses to each of the 3-item clusters representing ability, effort, difficulty and luck can be computed.

DESIGN AND ANALYSES. A correlational strategy was used to explore the complex inter-relationships among various facets of self-concept and causal attribution perceptions. The analysis of these data included four separate factor analyses. The first three of these exploratory factor analyses attempted to determine empirically summated subscales which were based on items obtaining factor loadings greater than .40. The first analysis consisted of an exploratory factor analysis of the 80-item self-concept scale (P-HCSS). The factors obtained from this analysis were then compared to the original six subscales reported in the Piers-Harris Manual (Piers, 1983). Subscale scores determined by this initial factor analysis were conceptually labeled and then empirically computed. The 24-item Achievement portion of the MMCS was then factor analyzed and the factors conceptually labeled and then empirically computed. Likewise, the 24-item Affiliation portion of the MMCS was factor analyzed, factors conceptually labeled, and subscales empirically computed. The fourth exploratory analysis examined the complex relationship among the empirically derived P-HCSS and MMCS subscale scores. Finally, a confirmatory factor analysis using Bentler's (1985) EQS best fit modeling procedure is applied to the data to confirm an a priori model based on Covington's (1984) self worth theory. The results of this analysis will be presented in the form of a path analysis diagram which will display the complex inter-relationships between dimensions of self-concept and causal attribution perceptions.

RESULTS

The results of this study will be reported in four parts. First we will present our analysis of the Piers-Harris Self Concept Scale. Second, will be the results of our factor analysis of the 24 Achievement Attribution items from the Lefcourt et al., (1979) scale. Third, will be the factor analysis of the 24 Affiliation Attribution items form the Lefcourt scale. And fourth, will be the a reporting of

the inter-correlation of all empirically derived subscales among each other.

FACTOR STRUCTURE OF THE PIERS-HARRIS.

Using data from this study, the eighty items on the Piers-Harris were correlated with each other using Pearson Product Moment Correlations. The items were then factor analyzed using an initial principle components analysis with a varimax rotation and a subsequent oblique promax solution. The initial principle components analysis suggested the 34 factor solution that was used for analysis. Five interpretable factors, each with more than two items having factor loadings above .30, were determined. These factors were described as follows: 1) Behavior, 2) Personal Satisfaction, 3) Popularity, 4) Anxiety, and 5) Happiness. The items associated with each factor and the factor loadings (reference structure coefficients which are semipartial correlations) are shown in Table 11.

FACTOR 1, BEHAVIOR. Inspecting Table 11, the items that contribute to Factor One, (Behavior Factor) with loadings greater than .30 were items 12, 22, 34, 25, 56, and 14. All of these items are concerned with behavior. Four of these items are statements of "bad behavior" and a high score on this factor (1=Agree to 5=disagree) would be disagreement with perceived bad behavior, or as the negative loading for item 12 indicates, agreement with "I am well behaved."

FACTOR 2, PHYSICAL SATISFACTION. Factor 2 contains items 43, 8, 39, 54, and 73. Three of these items: 8) My looks bother me, 54) I am good looking, and 73) I have a good figure, deal with physical satisfaction. The other two items that contribute to this Factor: 43) I wish I were different, and 39) I like being the way I am, are concerned with personal satisfaction. This personal satisfaction could be interpreted by the respondent as also the degree of physical satisfaction or as satisfaction with a more general self-image. If these items are considered in terms of a general personal self satisfaction, their high correlation with those items referring to a physical satisfaction would suggest a close relationship between physical and personal satisfaction for this sample of early adolescents.

FACTOR 3, POPULARITY. Three items that contribute to Factor 3, termed the Popularity Factor, deal directly with popularity (items 57, 69, and 11). Another item, item 46 (I am among the last to be chosen for games), considers popularity as it is demonstrated by being included by others in activities. The fifth contributing item, item 60 (I have pleasant face), suggests that ones' countenance contributes to popularity, or at least that individuals who feel they do not have a pleasant face also feel that they are not popular.

Table 11

Factor Structure (r) and Reference Structure Semi-Partial (r.) Correlations of 5 Factors having Loadings greater than .30 with Items.

Item Number	Factor Structure (r) and Semi-Partial Correlations (r.) F1r	F1r.	F2r	F2r.	F3r	F3r.	F4r	F4r.	F5r	F5r.
				"GOOD BEHAVIOR" FACTOR 1						
12	-67	-58	00	02	-03	-05	-03	-01	08	01
22	76	57	13	-08	-07	01	15	03	-17	-05
34	73	57	07	-02	-03	-04	07	-07	-03	-01
25	62	55	03	25	03	00	-04	-05	-27	-05
56	55	32	09	-02	-08	-08	-02	-04	17	07
14	51	33	40	07	-03	-01	26	17	-28	-04
				"PHYSICAL SATISFACTION" FACTOR 2						
43	16	05	76	65	-22	04	36	11	-20	00
8	-13	-09	72	55	-27	-03	23	01	-32	-07
39	09	16	-66	-52	26	-04	-20	-08	41	20
54	-05	-05	-68	-43	64	34	-14	05	32	04
73	01	07	-58	-31	55	33	06	13	30	-10
				"UNPOPULARITY" FACTOR 3						
57	-01	-06	-22	02	74	69	-08	-07	21	-09
69	09	03	-29	03	66	47	-15	-07	35	01
11	-08	-03	32	-04	-56	-42	02	08	-38	-14
46	-01	-04	33	00	-59	-42	22	07	-34	-14
60	-18	-08	-53	-27	64	33	-18	00	33	00
				"HIGH ANXIETY" FACTOR 4						
37	-01	-06	27	00	-11	-05	67	65	-13	00
10	-07	-02	15	03	00	-01	62	60	00	-02
28	05	03	34	09	-09	02	55	49	-17	-08
74	13	06	28	-01	-20	00	61	39	-25	-04
79	-08	-01	30	11	-15	-01	35	36	-06	07
				"UNHAPPINESS" FACTOR 5						
2	-11	-01	-28	-01	26	-02	-30	-09	65	60
52	-17	-06	-49	-14	35	-01	-19	02	71	53
50	21	01	-35	14	-29	01	44	18	-50	-34
80	-37	-17	-26	-02	35	12	05	11	53	33

FACTOR 4, ANXIETY. The items in Factor Four (37, 10, 28, 74, and 79) are concerned with anxiety. respondents with a high score on this Anxiety Factor are those who do not consider themselves to be nervous and anxious.

FACTOR 5, HAPPINESS. Three out of the four items in Factor Five, the Happiness Factor, are concerned with happiness and cheerfulness. The fourth item, item 80, is "I am a good person". This agreement between scores on statements concerned with being a "good person" and happiness suggests a link between one's perception of one's goodness and one's happiness: that a person who thinks that he is "good" also feels that he is happy and a person who feels that he is not "good" feels unhappy.

The factor score inter-correlations are shown in Table 12. There are significant correlations, indicating interrelationships for most of the factors that combine to form self-concept as measured by this instrument. These intercorrelations give support for the view of self-concept as multidimensional, with distinct, yet interrelated factors. Factor One, Behavior, appears to be the most distinct factor, with insignificant correlations with Personal Satisfaction, Popularity and Anxiety. These five factors determined the five empirically computed subscales used in later analyses and appear in Table 12.

TABLE 12
FACTOR SCORE INTER-CORRELATIONS FROM THE SELF-CONCEPT ANALYSES

Factors	F1	F2	F3	F4
F1				
F2	15	15		
F3	04	-36		
F4	08	28	-10	
F5	-02	-29	35	-05

Table 13

Intercorrelations for five Empirically Computed Subscales.

	Subscales				
Subscales	F1	F2	F3	F4	F5
F1 GOOD BEHAVIOR	(79)				
F2 PHYSICAL SATISFACTION	15	(79)			
F3 UNPOPULARITY	14	69	(78)		
F4 HIGH ANXIETY	05	36	25	(70)	
F5 UNHAPPINESS	40	56	53	34	(74)

Note. Internal consistency coefficient-alpha estimates appear in parentheses in the diagonal. All decimal points have been excluded from the table. Coefficients greater than .16 are statistically significant ($p<.001$).

Table 14
Correlations of Five Factor Analytically Derived and Empirically computed Subscale Scores With the Six Piers-Harris Subscale Scores.

Five Subscales	Piers-Harris Subscales BH	IS	PA	AN	PO	HP	TOTAL
F1 GOOD BEHAVIOR	88	56	22	17	16	35	55
F2 PHYSICAL SATISFACTION	32	46	78	68	58	84	68
F3 UNPOPULARITY	-22	-40	-67	-22	-29	-46	-42
F4 HIGH ANXIETY	18	32	31	84	41	39	51
F5 UNHAPPINESS	-38	-39	-37	-15	-28	-53	-44

The Correlations of the five factors found in this study with the six Piers-Harris recommended subscales are shown in Table 14. The five factor solution found in this study matches five of the six Piers-Harris subscales. No logical match could be found for the Piers-Harris Intellectual and School Status factor, but the correlations shown in Table 14 suggest a relationship between the Piers-Harris Intellectual and School Status subscale and both the Behavior and Personal Satisfaction factors, indicating that school status may be related to both behavior and personal/physical satisfaction. The items that load on these factors also appear to indicate this relationship.

FACTOR ANALYSIS OF 24 ACHIEVEMENT ATTRIBUTIONS.

The items from the Multidimensional-Multiattributional Causality Scale were first correlated with each other, looking at the 24 achievement items and 24 affiliation items separately. A principle components analysis suggested a six factor solution for both the achievement and affiliation items. The subsequent factors from the oblique promax rotation analysis for the 24 achievement items appear in Table 15.

ACHIEVEMENT FACTORS.

FACTOR C1. The first achievement factor (C1) looks at achievement along a continuum ranging from effort on one end to ability or luck at the other end.

Effort<---------->Luck/Ability

Referring to the instrument as administered, with 1=Agree and 5=Disagree, a person who would agree with this factor would view achievement as a result of effort, and one who would disagree with this factor would view achievement as a result of luck or ability. The items with high positive loadings on this factor include items that refer to both luck and ability as important elements in achievement. Referring back to Table 15 , high correlations between individual items referring to luck and ability are also apparent. Item 35, If I were to get poor grades it would seem to me that I wasn't smart enough, for example, correlates highly with item 32, My low scores on tests sometimes make me think I was just unlucky. This

suggests that for some respondents ability may be viewed in terms of luck, that what is given by chance and outside of control.

Table 15
Reference Structure Semi-Partial Correlations of 6 Factors with the 24 ACHIEVEMENT ATTRIBUTION Items from the Lefcourt Scale.

ITEM NUMBER	FACTORS C1	C2	C3	C4	C5	C6
	FACTOR C1					
35	66	01	04	-04	00	-03
19	64	08	00	-10	06	08
32	57	-07	-01	.14	-21	24
24.	47	-07	06	23	07	01
22.	41	-10	45	-07	24	-04
48.	37	-03	-26	16	18	01
16.	36	04	-30	34	01	-07
38.	34	-02	57	25	00	-09
41.	-34	09	34	35	-03	23
40.	30	26	-10	39	-20	-01
		FACTOR C2				
25	-01	64	11	-14	-02	-04
1	-14	62	03	08	08	04
9	09	58	04	-40	-03	-05
03.	15	55	07	17	08	06
			FACTOR C3			
17.	-05	09	64	-10	-03	00
38.	34	-10	57	25	00	-09
33.	-11	30	52	06	04	-03
22.	41	-10	45	-07	24	-04
46.	14	12	-37	04	47	-01
41.	-34	09	34	35	-03	23
16.	36	04	-30	34	02	-07
				FACTOR C4		
08.	00	-06	09	71	06	-06
09.	10	58	04	-40	-03	-05
40.	29	26	-11	39	-21	-02
06.	11	-10	03	38	30	-02
41.	-34	09	34	35	-03	23
16.	36	04	-30	34	02	-07
					FACTOR C5	
14.	-04	-02	-03	-11	74	12
30.	-03	12	09	18	55	-03
46.	15	12	-37	04	47	-01
06.	11	-10	03	38	30	-02
						FACTOR C6
11.	10	03	-10	-08	-02	74
27.	23	00	15	-10	01	68
43.	-13	-02	-05	07	11	67

FACTOR C2. Factor two (C2) looks at achievement as effected by effort. A respondent with a high score on the Effort Factor would disagree that effort was a key determinant of achievement and one who

would have a low score would agree that effort was important in achievement. On this Factor, item 3) If I were to receive low grades, it would make me question just how smart I am suggests a relationship between ability and effort. A person agreeing with this would also agree that that poor grades are a result of not studying hard enough (item 1). In this factor, the ability referred to may then be one that can be controlled, or changed, the same as effort.

Agree<---------->Disagree
Effort/Ability

FACTOR C3. The third factor (C3) views achievement much more complexly, distinguishing between achievement specifically in cases of success and failure. On one side of the continuum is the respondent who sees failure as related to luck, success as related to effort and ability, and on the other side is the respondent who sees failure as related to effort, success due to luck. The person with a low score on this factor would attribute his successes in achievement to his internal effort or ability and protect his ego by viewing his failures as due to luck, or external factors. This healthy person is in contrast to one with a high score on this factor who would attribute his failure to his efforts and his success to external factors.

Luck (Failure) and Ability/Effort (Success) <----------> Effort (Failure) and Luck (Success)

FACTOR C4. The fourth factor (C4) is similar to the first in that it considers both effort and luck. The luck considered in this factor, however appears to be related to context and not ability, with items like "Some of the times that I have gotten a good grade in a course, it was because the teacher was an easy grader" being correlated with "Sometimes I have to consider myself lucky for the good grades I get."

Effort<---------->Luck/Context

A respondent who scores high on this factor, disagreeing with the factor, would regard achievement as related to effort.

FACTOR C5. Factor five (C5) deals with the importance of context in both success and failure. A score on this factor would be indicative of whether the respondent saw context as important in influencing achievement. A person with a low score would agree that context is important, and one with a high score that context was not important. Context, as used in this factor is indicative of an external force or characteristic in others that influences achievement. Specifically, it is a characteristic of the teacher that determines achievement.

Agree<---------->Disagree
Context

FACTOR C6. The sixth achievement factor (C6) looks at achievement along the continuum of ability. All of the items deal with ability in the context of success. A high score on this factor

would be indicative of a respondent who disagreed with "I feel that my good grades depend on how smart I am", viewing achievement as not correlated highly with ability.

Agree<---------->Disagree
Ability

The items that contribute to specific subscales as reported by Lefcourt (Lefcourt, Von Baeyer, Ware and Cox, 1979) are shown in Table 1 in the introduction. Some of these cells coincide with factors found from the data in this study. Factor One contains items 16, 24, 32, 40, and 48 from the Luck subscale, items 35 and 19 from the Ability subscale, items 22 and 38 from the Context Subscale, and item 41 from the Effort Subscale. Item 41 (effort) was negatively correlated with the other items. The six factors were then inter-correlated among each other and this analysis appears in Table 16.

TABLE 16
Inter-factor correlations (ACHIEVEMENT ATTRIBUTIONS)

Factor	C1	C2	C3	C4	C5	C6
C1						
C2	-16					
C3	-16	17				
C4	31	-06	-04			
C5	32	-17	04	21		
C6	15	06	00	10	02	

AFFILIATION ATTRIBUTIONS.

Of the original 48 items of the Lefcourt et al., (1979) scale, 24 of them are associated with social affiliation attributions. These item numbers may be seen in Table 2 of the introduction to these papers. The 24 Affiliation items were factor analyzed and the results are contained in Table 17.

FACTOR C7. There were six factors from the data dealing with affiliation or friendship. The first, C7, is similar to C2 in it's consideration of ability and effort. In this factor, as in C2, ability appears to be within one's control. On this factor, a score would indicate agreement or disagreement with the importance of the influence of these internal characteristics in friendships and degree of loneliness.

Agree<---------->Disagree

Table 17
Reference Structure Semi-Partial Correlations of 6 Factors with 24 AFFILIATION ATTRIBUTION Items From The Lefcourt Scale.

Item NUMBER	C7	C8	C9	C10	C11	C12
	FACTOR C7					
39.	61	-12	00	01	06	10
37.	61	01	03	17	02	-10
05.	52	08	-05	-06	-04	14
23.	47	05	05	19	11	00
31.	44	26	08	07	-17	07
18.	33	-08	-07	-28	11	46
		FACTOR C8				
45.	02	66	-09	00	-02	-06
13.	-08	63	14	-05	10	-12
29.	26	52	21	-02	-07	-16
12.	-15	49	-08	-06	26	24
21.	16	42	08	01	-16	16
44.	-03	31	-24	43	23	19
			FACTOR C9			
36.	07	-05	71	04	07	18
15.	18	16	59	-18	07	-03
04.	-16	07	56	17	02	22
20.	-15	-12	40	53	07	-02
34.	-10	03	32	03	-08	74
				FACTOR C10		
47.	12	-03	-05	64	-27	25
07.	22	-03	-06	57	19	-21
20.	-15	-12	40	53	07	-01
28.	09	-04	29	50	02	-16
44.	-03	31	-24	43	23	19
					FACTOR C11	
26.	01	-11	17	-04	73	06
10.	-05	06	03	04	72	-10
42.	18	07	00	03	49	17
						FACTOR C12
34.	-10	03	32	03	-08	74
02.	28	-11	-02	00	17	46
18.	33	-08	-07	-28	11	46

FACTOR C8. Affiliation Factor 2 (C8) appears to be considering the importance of effort in successful friendships, but includes consideration of an element of luck in the failure of friendships, particularly one's own friendships. Agreement with this factor is agreement that successful friendships takes effort, but that failure can be due to external factors, such as "chance remarks". Item 21, "When I hear about two friends who break up, I usually think that they probably did not try hard enough to make their friendship work" contrasts with item 44, "Difficulties with my friends often start

with chance remarks". This contradiction suggests the perception of the importance of lucks in one's own failures, but that of effort, or lack of effort for the failures of others.

Agree<---------->Disagree
Effort (Success and Failure for Others)
Luck (Personal Failure)

FACTOR C9. The third Affiliation Factor (C9) considers affiliation in light of luck and ability or skill. This factor, like C1 relates luck to ability and appears to be viewing ability as a skill that one is given by chance, rather than that which is honed by effort as in C2 or C8. C3 considers successful affiliations as affected by this luck or given knack for making friends. A high score on this factor would suggest a belief in something other than luck/ability in determining successful affiliations and a low score would suggest a belief that this luck/ability did determine successful affiliations.

Agree<---------->Disagree
Luck/Ability (Success)

FACTOR C10. The fourth Factor (C10) also considers Luck and ability as it influences affiliations, but in the context of failure or difficulty with friendships.

Agree<---------->Disagree
Luck/Ability (Failure)

FACTOR C11. The fifth factor (C11) also deals with affiliation within the realm of failure, but considers the importance of context. This factor is identical to lefcourt's context cell under conditions of failure. Agreement or disagreement with this factor is agreement or disagreement with the importance of a stable, external force in determining affiliation under failure conditions. Looking specifically at the items that load on this factor, there is the suggestion that this external force, or context, as Lefcourt calls it, is an innate propensity found in others to like or dislike someone.

Agree<---------->Disagree
Context/Propensity of Others (Failure)

FACTOR C12. The final affiliation factor (C12) is similar to C11, but under successful conditions. Again, what Lefcourt terms context appears to be a propensity or ability that others possess. In this factor this propensity determines one's successful enjoyment of an event, rather than a particular friendship.

Agree<---------->Disagree
Context/Propensity of Others (Success)

The six Affiliation factors (C7 to C12) were than inter-correlated among each other and are shown in Table 18 .

TABLE 18
INTER-FACTOR CORRELATIONS (AFFILIATION locus OF CONTROL ATTRIBUTIONS)

FACTORS	C7	C8	C9	C10	C11	C12
C7						
C8	20					
C9	02	14				
C10	-07	07	20			
C11	-01	16	08	15		
C12	07	13	-23	00	-02	

INTER-RELATIONSHIPS OF LOCUS OF CONTROL AND SELF-CONCEPT.

The initial principle components inter-correlation matrix is shown in Table 19 . There are eight significant (r>.16) correlations among the 17 factors in this study. All of these correlations indicate a positive relationship between high self-concept and internal locus of control. The Behavior Factor correlates with three of the Achievement-Attribution factors, demonstrating a strong relationship between one's perception of behavior and achievement control.

TABLE 19
Subscale Inter-correlations.

	SELF ESTEEM					ACHIEVEMENT LOCUS					AFFILIATION LOCUS					
Scale	F1	F2	F3	F4	F5	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11 C12
F1	79*															
F2	15	79														
F3	-16	-52	78													
F4	05	36	-08	70												
F5	-28	-26	19	-04	74											
C1	22	10	-06	24	-02	71										
C2	-31	-20	16	11	27	-12	60									
C3	08	00	04	12	04	55	30	69								
C4	10	00	02	16	14	63	16	53	61							
C5	21	14	-08	09	-11	48	-15	40	42	53						
C6	-06	-02	08	03	01	26	04	10	13	13	59					
C7	-11	-06	08	13	26	08	33	28	18	-04	13	57				
C8	-05	06	09	18	09	20	17	21	15	14	08	32	61			
C9	22	15	-10	27	-13	62	-15	25	39	38	23	07	27	61		
C10	28	16	-06	22	-18	55	-20	18	26	31	20	07	26	61	56	
C11	07	26	-11	24	00	28	03	19	13	21	04	10	42	23	23	53
C12	-01	-06	04	03	12	10	21	26	17	08	09	45	17	15	-05	12 36

*Coefficient Alpha in diagonal. Correlations greater than .16 are statistically significant ($p<.01$, $df=398$).

The correlation between the Behavior Factor and C1 (Effort<-->Luck/Ability) would indicate that a person with a high score on Behavior, feeling that that their behavior was good, would also have a high score on C1, indicating that they felt effort was important in achievement. This perceived good behavior and high self-concept is, therefore, related to the perception that individual effort can impact on achievement, which is an internal locus of control notion; e.g. high self-concept is correlated with internal locus of control; in other words, evidence for Covington's (1984) "ego hypothesis".

The Behavior factor is negatively correlated with C2 (Effort/Ability). A high score on C2 would be indicative of a person who disagreed that effort and ability, as they are within one's control, are important in achievement and a low score on Behavior would be indicative of a person who perceived their behavior as poor. The negative correlation between these factors would indicate the tendency of a person with a high score on one factor to have a low score on the other factor. This pattern would indicate a relationship

between the perception of good behavior and effort or ability in achievement, again between high self-concept and internality.

The Behavior factor is also positively related to C5 (Context). In this relationship, a high score on C5, indicating that an individual disagrees that context is important in achievement, would be correlated with a high score on Behavior, indicating that a person disagrees that he has bad behavior. These high scores would be demonstrating a disagreement with context, or externality and perceived bad behavior. An individual with a low score on Behavior would be expected to have a low score on C5, indicating an agreement with context (external control) and perception of bad behavior (low self-concept).

The second Self-Concept Factor, Personal Satisfaction, is negatively correlated with C2 (Effort/Ability). An individual with a high score on one factor, then, would be expected to have a low score on the other. A high score on Personal Satisfaction, indicating that a person was satisfied with the self and physical appearance (high self-concept) would be expected to be found with a low score on C2, indicating an agreement with the importance of effort and ability in achievement (internality).

The correlation matrix in Table 19 also shows a positive relationship between the popularity Factor and C2 (Effort/Ability). A high score on both of these scores would demonstrate disagreement with effort or ability as essential to achievement and unpopularity; low scores indicating a relationship between one's perception of popularity (high self-concept) and the efficacy of effort and ability in achievement (internality).

The Anxiety Factor is significantly related to two achievement Attributions, C1 and C4. The correlation between Anxiety and C1 and C4 suggests a relationship between high anxiety and the perception of effort as more important in achievement than luck/ability/context. Conversely, low anxiety is correlated with the perception that luck/ability/context is more important than effort in achievement. This relationship may be suggesting that one who believes that achievement is within one's own control (internality) may be more anxious than one who believes it is outside of one's control (externality-luck/ability). By attributing the control to something outside ones' self, anxiety is reduced. This finding would also support the "ego hypothesis" of Covington (1984).

FACTOR ANALYSIS OF THE MMCS AND PIERS-HARRIS SUBSCALES.

Five factors were determined from a factor analysis of the five self-concept, six achievement attribution and six affiliation attribution subscales. The final five factors (S1 to S5), and loadings (semi-partial coefficients) of this analysis are shown in Table 20 . The first factor has significant loadings only from the initial locus of control factors. Four of these initial factors are concerned with achievement and one with affiliation. This factor suggests a continuum with the perception of external determination of achievement and affiliation on one end and internal determination at

the other. The externality in this factor is due to chance (C3, C4), context or a stable, characteristic propensity in others (C5), and luck as in ability that is given and outside of one's control (C1). An individual perceiving this external causation for most events may also perceived failure as due to one's effort (C3). Internal control, at the other end of the continuum on this factor is due to effort. An individual with this perception of causation may also consider luck as an element of importance in failure.

Table 20
Factor Analysis of Self-Concept and Attribution Subscales.

	FACTORS				
Subscales	S1	S2	S3	S4	S5
Self-Concept					
F1	.16	-.67	-.11	.03	.15
F2	-.01	-.34	.68	-.30	-.02
F3	-.06	.45	-.40	.47	-.10
F4	.10	.15	.67	.01	-.11
F5	.09	.61	-.04	-.01	.02
Achievement Attributions					
C1	.68	-.10	.11	.28	-.07
C2	.15	.64	.12	-.20	.21
C3	.74	.14	.02	-.12	.21
C4	.81	.15	.00	-.02	.00
C5	.62	-.21	.02	.05	-.06
C6	.01	.00	-.08	.51	.08
Affiliation Attributions					
C7	-.02	.17	.11	.12	.70
C8	-.10	.23	.46	.44	.21
C9	.32	-.26	.19	.48	.03
C10	.18	-.28	.21	.58	-.09
C11	.02	.07	.61	.18	.06
C12	.06	-.13	-.09	.00	.84

The second factor (S2) includes four significant elements from the self-concept measure and one from the achievement locus of control scale. This factor appears to be concerned primarily with the perception of one's self in terms of behavior, popularity, happiness and satisfaction. The factor indicates a correlation between a perception of bad behavior, personal dissatisfaction, unpopularity, unhappiness and internal control due to effort or ability. This suggests that if one feels he can control achievement outcomes he may also be dissatisfied with those outcomes and this negatively affects self-perception.

The third factor (S3) consists of factors from the self-concept and affiliation locus of control instruments. This factor indicates a relationship between personal satisfaction, popularity, and low anxiety in an individual's self-perception and the importance of the role of chance or context in affiliation failures. The individual who feels good (satisfied, popular, and not anxious) regards effort as important in friendships, yet, attributes failures in friendships to external causes. On the other hand, the individual who sees the self as anxious, unpopular, and dissatisfied perceives failed friendships as due to lack of effort rather than context or chance.

The fourth factor combines elements from both locus of control scales and the self-concept measure. This factor considers personal satisfaction and popularity in relation to luck. Luck, again seems to be regarded also in terms of ability, something one gets in "luck of the draw". This factor suggests a relationship between unpopularity and personal dissatisfaction with the perception of this luck, or given ability as a key determinant in achievement and affiliation outcomes. As in previous factors, this belief in luck as the causal agent in many outcomes is tempered by the perception of the influence of one's effort in failure. Personal satisfaction and popularity are related to the belief in something other than luck/ability: in other words, effort.

The fifth factor (S5) considers only the affiliation locus of control subscales. This factor is concerned with the importance of an ability in the self or others to influence successful affiliations. A high score on this factor would indicate the belief that this given ability or knack is not important, perhaps, that effort is. Table 21 shows the interfactor correlations for these five superordinate factors. There is a relationship between Factor 2 and 5 and Factors 1 and 4. Both Factors 2 and 5 are concerned with ability/luck or effort in outcomes.

Table 21
Inter-correlation of Five Super Factors

Super Factors	S1	S2	S3	S4
S1				
S2	-.06			
S3	.17	-.14		
S4	.28	-.03	.12	
S5	.14	.24	.08	.08

CONCLUSIONS

Of the four studies reported in this symposium, this one was probably the most ambitious. This exploratory study examined the multidimensional relationships among adolescents' perceptions of self-concept and attributions of personal causality. Nearly 400

subjects between the ages of 12 and 16 were administered modified versions of The Piers-Harris Children's Self-concept Scale and the Multidimensional Multiattributional Causality Scale. Subscales within each instrument were independently determined through exploratory factor analysis. The subscales were then factor analyzed and the results used to describe the complex relationships among perceptions of self-concept and causal attributions. The results, in general, confirm Covington's (1984) self worth theory. Future work with this data base will involve confirmatory factor analysis utilizing Bentler's (1985) EQS procedures.

Locus of Control and Its Relationship To Self-esteem: A Developmental Association.[1]

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ABSTRACT. An existing cross-sequential data set of locus of control and self-esteem measures for 169 pre-adolescent children between the ages of 8 and 13 was examined. Four locus of control components were determined, three which were demonstrated to be age-dependent and one which was age-independent. The inter-relationships among age-dependent and age-independent components of locus of control and self-esteem scores, as well as the moderating influences of gender and age variables were defined through an EQS causal path analysis which statistically confirmed an a priori specified model. While self-esteem was not found to be related to cross-sectional differences among age groups, three locus of control subscales were significantly differentiated by age groups, and one subscale was not. Furthermore, the age-independent component of locus of control was significantly related to self-esteem (r=-.52) while the three age-dependent subscales were not. The results are discussed within the context of Covington's (1984) Self Worth Theory which predicts a statistical association between personal perceptions of locus of control as determinants of self-esteem. Waterman's (1984) eclectic theory regarding the development of an optimally functioning healthy personality is also discussed.

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LOCUS OF CONTROL AND ITS RELATIONSHIP TO SELF-ESTEEM:
A DEVELopmental ASSOCIATION.

Many major psychological theories including social learning theory and cognitive-attribution theory, as well as eclectic positions such as those describing personal competence have attempted explanations of the construct, locus of control. Speculation regarding individual differences have focused on whether or not this measure reflects a stable personality characteristic which is either singular or multifaceted, or one which is subject to change through the influence of experience and maturation (Lefcourt et al., 1979). Covington (1984) has stated that "One of the major organizing principles of psychology is the assumption that individuals act in ways that promote a positive self-identity in order to gain the approval of others and to disassociate oneself from actions or events that might attract negative social sanctions" (p. 78). This general tendency for creating and maintaining positive self-image is called the "Self-worth motive" and predicts a tendency for individuals to take personal responsibility (internal locus of control) for their successes and attribute failure to external causes that do not reflect on their worth (self-esteem). Covington describes this as the "egotism hypothesis": e.g., internal perceptions coinciding with positive or strong self-esteem and external perceptions coinciding with negative or weak self-esteem. Marsh (1984), using Covington's (1984) self-worth motive as a model, has also presented evidence to support these predictions. However, Marsh (1984) and others (Marsh & Shavelson, 1985)) have also demonstrated that both self-esteem and locus of control are multi-dimensional constructs (see Lefcourt, et al, 1979 as well) which are context-specific: eg., causal attributions for success and failure in differing curriculum content areas such as reading and mathematics may have differential effects upon self-esteem. While Marsh's reports generally confirm the relationship between causal perceptions and self-esteem, they, for the most part do not examine developmental influences on this relationship. Harter (1983) hypothesizes a similar association between locus of control and self-esteem. Waterman (1984) has developed a model of the healthy personality in which he believes that locus of control is one of four important facets making up the optimally functioning psychological personality. Waterman's (1984) other three components of a healthy personality include a positive sense of personal identity (self-esteem), self-actualization, and a high level of principled moral reasoning. He theorizes that this personality "develops" across time and achieves stability in adults. He also hypothesizes statistically significant inter-relationships among his four components.

An earlier cross-sequential analysis of pre-adolescent children's developing locus of control perceptions (Sherman, 1984) obtained a strong linear trend indicating that personal control perceptions were associated with growing older. This earlier study supported Waterman's (1984) predictions with regard to the development of internal locus of control. Younger children were found to be relatively more external than their older peers. This earlier study also demonstrated longitudinally that children's intra-personal

perceptions of personal control change over time from externality to internality. The data base of this earlier study also included a measure of the children's self-esteem. Since Waterman's (1984) model suggests that self-esteem, like locus of control, should develop over time and become more positive, the first objective of the present study was to examine the relationship between self-esteem and age. Another objective was to confirm Covington's (1984), Harter's (1983), Marsh's (1984) and Waterman's (1984) hypotheses predicting a statistically significant relationship between locus of control and self-esteem. Confirmation of this relationship might be interpreted as construct validity. A third objective of the present study was to examine the influence of age and gender on the predicted relationship between locus of control and self-esteem: internality and positive self-esteem at one end of the continuum and externality and negative self-esteem at the other end. A fourth objective was to establish a model of the complex inter-relationships among gender, age, self-esteem and locus of control.

METHOD

SAMPLE. Data were obtained from a laboratory school administered by a midwestern university school of education. Further descriptions of this population are contained in Sherman (1984). The present study examined children between the ages of 8 and 13 in five through eight during the last year of a three year longitudinal study (n=169).

INSTRUMENTATION. Locus of control was measured by the Children's Nowicki-Strickland Internal-External Control Scale (CN-SIECS) (Nowicki & Strickland, 1973). The scale has 40 declarative statements which require a "yes" or "no" binary response. Theoretically scores could range from 0 to 40, with high scores reflecting an external orientation and low scores reflecting an internal orientation. An abbreviated form of the Coopersmith Self-Esteem Inventory (CSEI) (Robinson & Shaver, 1973) was also annually administered. This instrument consists of 25 binary (yes/no responses) declarative items. The items were phrased in both negative and positive forms and were scored one point each for responses which reflect "positive" self-esteem. High scores (25) reflect strong positive self-esteems whereas low scores (0) reflect weak or negative self-esteems.

DESIGN AND ANALYSIS. To further our understanding of the age/locus of control relationship we computed 40 one-way ANOVAs, one for each item of the CN-SIECS by age groups. From these analyses we identified patterns of locus of control responses for our age groups. Post-hoc contrasts indicated which age groups were significantly different and in which direction - from external to internal responses - for each of the 40 items. This initial analysis indicated similarity and difference in pattern among items and assisted us in establishing subscales with significantly different mean scores for each age group. Subscales were inter-correlated with each other as well as with self-esteem, age and gender. From this point on the strategy of analysis was correlational and attempted to identify an a priori EQS causal path analysis (Bentler, 1985) confirming our specified model of the relationship between Self-esteem and Locus of Control.

RESULTS

Multiple 1-way ANOVAs of the CN-SIECS items revealed four distinct developmentally related response patterns. Nearly half of the items were described as "age-independent" in that the children's responses were not significantly different among these three age groupings. Three other response patterns were also evident and were describe as "age-dependent" (AD). One AD pattern revealed significantly more external responses in the 8-year-old sample than in the 9/10/11-year-olds or 12/13-year-olds. Another pattern revealed significantly more internal responses in the 12/13-year-old sample than in the 8-year-olds or the 9/10/11-year-olds. A third pattern obtained significantly different mean scores among all three age groupings with a pattern of significantly more external scores in the 8-year-olds and internal scores in the 12/13-year-olds with the 9/10/11-year-olds in the middle. Thus, four distinct locus of control subscales were statistically determined and were described as either age-independent (AI) or age-dependent (AD-young-EX, AD-old-IN, AD-bipolar). A three-way within and between subjects ANOVA of these four subscale scores (the repeated measures factor) by the three age groups by gender (between subjects factors) obtained a statistically significant two-way interaction among the age groups and the subscales ($F(6,489)=12.54$, $p<.001$). Gender was not a statistically significant factor. Table 22, 23 and 24 and Figure 1 present the results from these analyses.

Table 22
Two-way Within and Between Subjects ANOVA of Four Locus of Control Mean Subscale Scores (repeated measures) by Three Age Groups by Gender (n=169).

Source	df	MS	F	p
A (Age Groups)	2	3.66	50.43	.001
B (Gender)	1	.06	.76	
A x B	2	.02	.18	
error	163	.07		
C (Subscale Scores)	3	.4	16.76	.001
A x C	6	.32	12.54	.001
B x C	3	.03	1.06	
A x B x C	6	.03	1.13	
error	489	.03		

Table 23
Four Mean Locus of Control Subscale Scores by Three Age Groups.

Three Age Groups	n's	Four locus of control subscales AI	AD-young-EX	AD-old-IN	AD-bipolar
8-yr olds	26	.37	.42	.51	.63
9/10/11-yr-olds	86	.30	.21	.44	.34
12/13-yr-olds	57	.27	.16	.21	.15

Table 24
Inter-correlation Matrix (n=169).

Variables	CN-SIECS	AD-y	AD-o	AD-bp	AI	CSEI	AGE	Gender
CN-SIECS								
AD-y-EX	.68							
AD-o-IN	.83	.43						
AD-bipolar	.66	.44	.54					
AI	.84	.45	.50	.35				
CSEI	-.49	-.25	-.36	-.27	-.51			
AGE	-.48	-.34	-.54	-.48	-.23	.02		
Gender	.06	.14	-.02	.05	.06	-.11	-.00	1.00
Means	12.68	1.59	4.08	.96	6.05	16.86	10.56	.52
S.D.	5.65	1.40	2.26	.92	2.66	5.39	1.70	.50

Bentler's (1985) EQS best-fit modeling procedure was next applied. Our model specifications assumed that self-esteem was a dependent measure predicted by the independent measure AI-locus of control. The model reported in Figure 2 was analyzed in EQS with no parameter constraints. No special problems were encountered during optimization. Figure 2 presents the EQS path analytic model which we specified. A non-significant chi-square goodness of fit value (13.38, df=7, $p > .05$) was obtained from the EQS analysis indicating that any deviation from our model specifications is within the realm of chance for these data. The Bentler-Bonett normed fit index was .95 indicating an excellent model fit to the data (maximum = 1.00). Also, this analysis obtained an absolute standardized residual of only .03. This analysis substantiates our model which assumes that two distinct elements of locus of control perceptions exist: one which is age-dependent and the other age-independent. And, self-esteem is a causal function of only the age-independent locus of control perceptions.

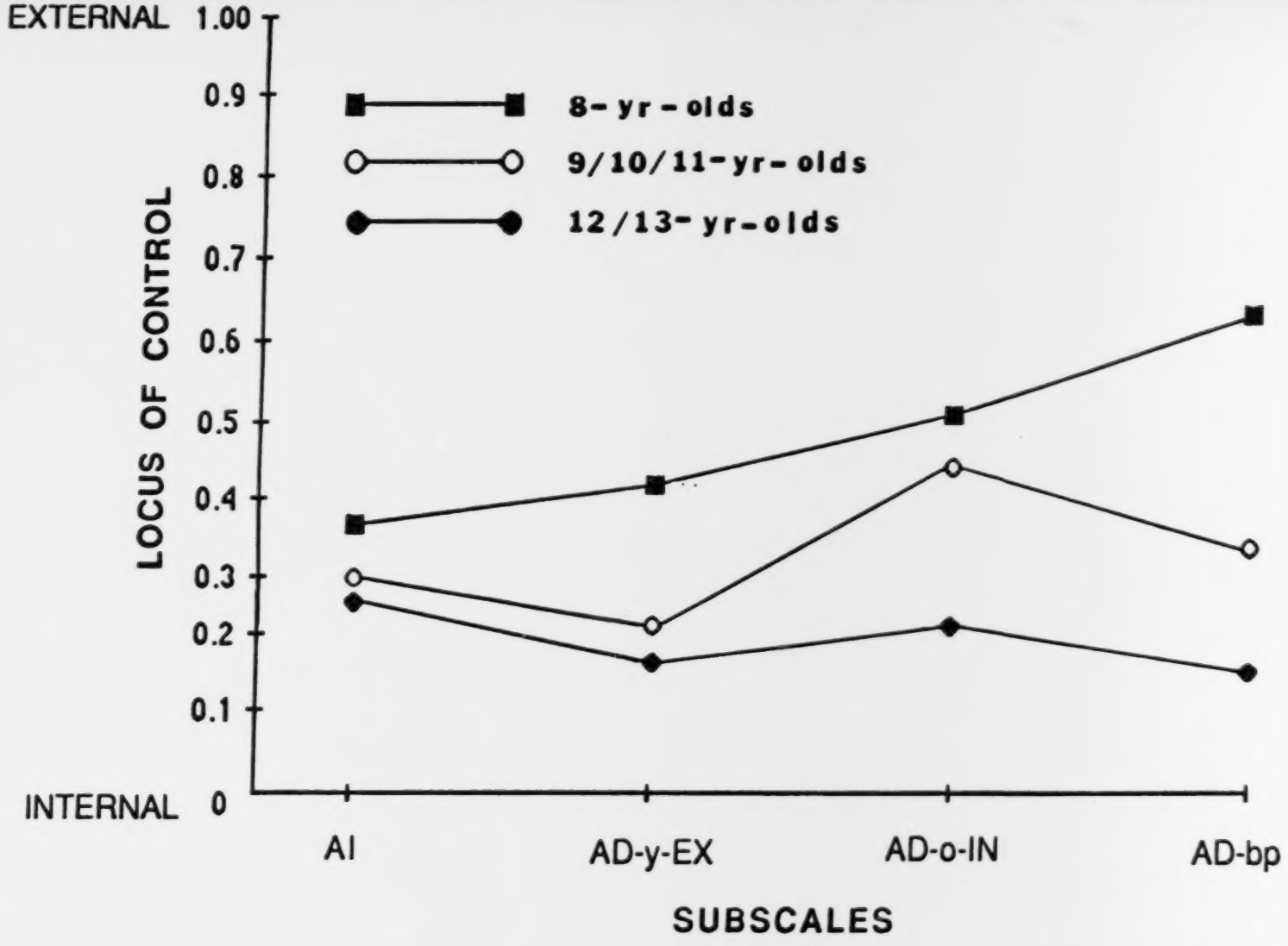

Figure 1

Plotting of Four Locus of Control Subscales by Three Age Groups.

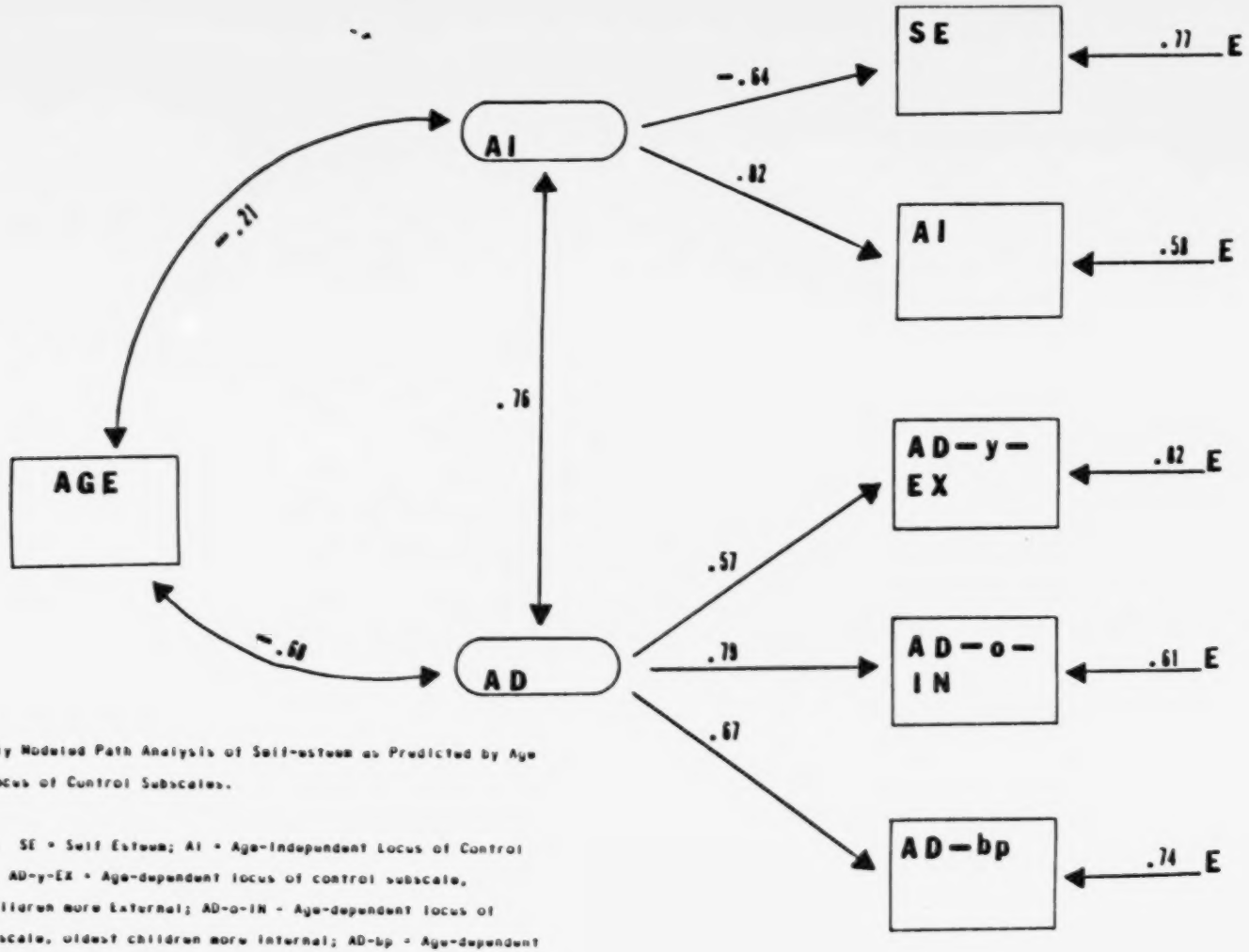

Figure 2

EQS Causally Modeled Path Analysis of Self-esteem as Predicted by Age and Four Locus of Control Subscales.

Notes. SE = Self Esteem; AI = Age-Independent Locus of Control subscale; AD-y-EX = Age-dependent locus of control subscale, youngest children more External; AD-o-IN = Age-dependent locus of control subscale, oldest children more Internal; AD-bp = Age-dependent locus of control subscale, Bipolar; AI = Age-Independent locus of control construct; AD = Age-dependent locus of control construct. Coefficients next to double-arrowed curved lines are Pearson Correlations. Coefficients next to single-arrowed lines are standardized regression weights. Chi-square goodness of fit = 13.38, df = 7, p > .05. Bentler-Bonett normed fit index = .95.

CONCLUSIONS

The rational for examining the relationship between self-esteem and locus of control was primarily influenced by several recent reports including Harter's (1983), Covington's (1984), Marsh's (1984) and Waterman's (1984). While we are quite aware that recent trends in research on both of these concepts indicate that they may be much more context-specific and multifacitated in nature (eg., see Lefcourt et al., 1979; Marsh & Shavelson, 1985; Marsh et al., 1988), we still believe that there is room for a general locus of control or self-esteem construct. Clarifying and confirming the relationship between these two constructs enhances the construct validity of each.

Waterman's eclectic theory hypothesizes that the optimally functioning psychological individual will have a sense of personal identity, will be self-actualized, will have an internal locus of control, and will be capable of principled moral reasoning. Thus, according to his psychology of individualism, he has predicted that there should be a statistically significant relationship between locus of control and self-esteem in a psychologically healthy population of individuals (Waterman, 1984, p 57), and that both of these dimensions should develop across time. Partial support for both of these predictions was obtained in our study. The CN-SIECS locus of control measure (full scale scores) was significantly and inversely related to age as Waterman (1984) and others would have predicted. While both full scale self-esteem and locus of control measures were significantly related to each other, only the statistically derived age-independent component of locus of control was significantly ($p<.01$) related to self-esteem. The three age-dependent locus of control subscales were not significantly related to self-esteem.

Waterman (1984) made his prediction of a significant association between locus of control and self esteem on the basis of a well integrated individualistic personality type which he only expected to find among an adult population. The trends which we have reported appear to be pointing toward the natural development of optimally functioning, psychologically healthy individuals, especially with regard to their personal perceptions of control. Covington's (1984) Self Worth theory, or the "egotism hypothesis," would also predict that attributing causes to the self, especially in the condition of success, is ego-strengthening and should have the effect of strengthening positive self esteem. This was the basis for our causal path analysis and suggests that perceptions of control influence self-esteem rather than the reverse. Thus, our data do partially support Covington's (1984) egotism hypothesis especially with regard to our age-independent subscale of locus of control. One interpretation of these findings might be that there are components of locus of control (the Age-Independent subscale) as well as self-esteem which are relatively stable and not nearly as subject to change from the influences of maturation and experience: i.e., an immutable and stable dimension of personality. Perhaps it is primarily the AD components of locus of control which are relatively more influenced by cultural differences during pre-adolescent development while the AI component might represent a more stable personality characteristic.

A Reanalysis of the Factor Validity of the Coopersmith Child Self-Esteem Measure

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Abstract

The major objective of this study was one one of comparing two factor structures of the Coopersmith Child Self-Esteem instrument. The original factor structure of the instrument was derived by Coopersmith from a restricted response format, binary responses. The new factor structure was derived from a wide range response format, 10 category Likert-type scale.

One hundred thirty-two young adolescents, average age 12.3, responded to the 58 Coopersmith statements using the wide range format. An exploratory factor analysis defined seven factors. The factors were used to define a hypothesized structure that was tested using confirmatory factoring procedures. The exploratory model was found to be unacceptable. Coopersmith's factor structure was also used to define a hypothesized structure for a confirmatory factor analysis. It too was found to be an unacceptable model for the data. An iterative data reduction technique reduced the Coopersmith to 16 item instrument that provided an excellent two factor fit to the empirical data.

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Background

It seems to be widely accepted that one must believe in oneself in order to effectively deal with the environmental demands with which one is confronted (Coopersmith, 1967; McNeil and Rubin, 1977). According to Coopersmith (1967), self-esteem is a personal judgment of worthiness. The degree of self-esteem an individual expresses reflects the extent to which the individual's "successes" approach their aspirations in areas of performance that they personally value.

It is assumed that the construct of self-esteem (as measured by the Coopersmith Self-Esteem Inventory, CSEI) manifests itself differently in different situations (Coopersmith, 1967). The items on the CSEI may be grouped according to the theoretical constructs they purport to measure (General Self, Social Self-Peers, Home-Parent, and School-Academic). These factors or subscales represent various groups of characteristics or feelings which are presumed to be related to self-esteem.

The Coopersmith (1981) Self-Esteem Instrument utilizes a binary response format. He reports five self-esteem subscales: School/Achievement, General Self, Social Self, Home/Parents, and Lie. Coopersmith encourages the use of these five subscales. Other researchers have subsequently validated his subscales either partially or totally. All of the research uses his instrument as he originally developed it, with a binary "like me"-"unlike me" response format.

Coopersmith derived his five subscales through a factor analysis of the 58 items of his instrument. The subsequent analyses carried out by other researchers also use factor analyses of the binary responses. It is a well established fact that there are serious methodological flaws associated with the factor analysis of binary variables, yet many researchers continue to employ such analyses. The major problem associated with the analyses is that items are grouped on factors more as a consequence of similarity of their desirability, probability of "like me" response, than as a consequence of their linear relationships.

In this study the response format has been altered from the Like Me/Unlike Me forced-choiced format to the following ten point Likert response format: A: very true; B, C: moderately true; D, E: slightly true; F: slightly false; G, H: moderately false; I, and J: very false. The major objective of this study was one of comparing a factor structure of the Coopersmith (1981) Child Self-Esteem Instrument derived from a wide range

response format, 10 category Likert-type scale, to the factor structure derived from a restricted response format, binary response in a young adolescent population.

Methodology

Subjects

The 132 subjects selected for this study were sixth, seventh, and eighth grade students who attended junior high school in a suburban, South Western Ohio school district. All participating students were selected according to availability from a total population of approximately 1,750 students attending two middle schools. Ninety-three percent of these students were enrolled in the regular education classroom curriculum with both males and females being represented. More specifically forty-two percent of the students were male, fifty-eight percent were female, and the overall mean age was 12 years 4 months. Although all ranges of socioeconomic status were represented in the two schools, subjects were predominantly middle-class, white students. According to two 8-year employees of the participating school district approximately 50-55% of the students enter college.

Procedure

The CSEI was administered to one study hall class at a time by one examiner. Once the inventories had been distributed, students were instructed to follow along as directions were read to them; questions were then addressed. Once it was certain that all students understood the task, they were instructed to open their booklets and begin. Administration time was approximately 20 minutes. To facilitate scoring, computer forms were used.

Measures

Self-Esteem. The Coopersmith Child Self-Esteem Inventory (CSEI), intended for use with children 8 to 15 years old, consists of an eight item lie scale and 50 items (18 positive and 32 negative) reported to measure the extent to which individuals worry about themselves, the degree to which they are proud of their school performance, how they get along with their parents, how happy they are, and so on. Each item on the CSEI is a declarative statement to which the informant would ordinarily respond by indicating "like me" or "unlike me." However, in order to appropriately apply the procedure of factor analysis to the test data, subjects in this study are given the

following response alternatives instead of the original binary response format: A = very true; B, C = moderately true; D, E = slightly true; F = slightly false; G, H = moderately false; I, and J = very false. Item scores can range from 0-9.

According to Hofmann and Gray (1978), data obtained from a binary response format (i.e., "like me"/"unlike me") tend to be grouped into factors or clusters simply as a function of the item preference value demonstrated by the respondents. Since the items of the CSEI most likely do not have a similar preference value, the potential maximum item intercorrelation will be low when factor analysis is applied to them. The response format adjustment to the ten point Likert-type scale will increase the variability of responses to items, increase the item intercorrelations, and increase the validity of the obtained factors.

Analyses and Results

The data analyses were initially viewed as a two stage process. Stage 1 of the analyses was an exploratory factor analysis. Stage 2 of the process was a confirmatory factor analysis comparing the hypothesized structure associated with the exploratory factor analysis to a hypothesized structure derived from Coopersmith's (1981) discussion of the item content of subscales. However, there was a stage 3 in these analyses. This third stage should be referred to as model modification.

Stage 1. The data defined a 57x57 intercorrelation matrix. Because of coding errors item 58 was erroneously eliminated from the data set. The matrix was then factor analyzed using an incomplete principal Component Analysis (Feldman, Gagon, Hofmann and Simpson, 1988). It was concluded on the basis of the root plot that seven factors would be sufficient to account for the variance of the 57 variables. Therefore, seven factors were retained for interpretation. These factors were transformed to an oblique simple structure solution. The simple structure solution matrix retained for interpretation is the reference structure solution. The loadings of this solution matrix are correlations between the variable associated with the row and the factor associated with the column. The salient loadings, those loadings associated with variables that are definitive of factors, were identified as those reference structure loadings greater than or equal to .30. Thus, a salient loading implies that the associated factor accounted for at least 9 percent of the variable's variance. The item content by factor is reported in Table 1.

Table 1 Item content of seven factors identified by exploratory factor analysis (n=132) and Coopersmith's factors.

Factor	item content
Exploratory Factors	
parental / family relations	5,19,24,26,31,40,47,48,50,54
general self-evaluation	3,7,9,12,15,16,17,22,26,52,56
school / academic concern	2,9,14,35,42,44,49,51,56
lie scale	6,13,20,27,34,48,53,55,57
social interaction	4,8,11,18,25,39,46,52,53
confidence	1,3,10,11,22,23,36,41,45,46,54,57
leadership	28,29,30,32
Coopersmith Factors	
general self	1,3,4,7,1012,13,15,118,19,24, 25,27,30, 31,34,35,38,39,43,47, 48,51,55,56,57
social self-peers	5,8,14,21,28,40,49,52
home / parents	6,9,11,16,20,22,29,44
school / academic	2,17,23,33,37,42,46,54
lie	26,32,36,41,45,50,53

Stage 2. The second stage of the analyses is two confirmatory factor analysis intended to test the adequacy of the fit of the exploratory solution to the empirical data as well as the adequacy of the fit of Coopersmith's hypothesized structure to the empirical data.The confirmatory factoring method used in this study is a maximum likelihood estimation method within the context of Bentler's (1985) EQS algorithm. This algorithm is based upon new developments in statistical theory that are robust to violations of multivariate normality. This EQS algorithms fit a model to a set of data and then provide the fitted model and summary statistics indicative of how well the model fits the data set. For this study the model fitted is the exploratory factor solution. The model may be thought of within the context of Table 1. For example, the items of Table 1 associated with the first factor, **parental and family relations**, were assumed to define the factor in the confirmatory model. For each exploratory factor in Table 1 the associated items were used to define the factor in the confirmatory analysis. The same procedure was followed for Coopersmith's factors. Some variables were used in the definition of more than one confirmatory factor. This is not a problem as the intention of this stage of the analysis was one of determining how well the confirmatory model fit the empirical data. Three measures of fit were computed: chi-square goodness of fit,

Bentler-Bonett fit index, and average absolute residual. These measures are reported in Table 2.

Table 2 Summary statistics for the fit of the empirically determined data to three hypothesized structures.

Hypothesized Model	chi square (df) probability	Bentler-Bonnett	ave residual
Exploratory Factors	3127.741(1528) p<.001	.22	.09
Coopersmith Factors	2525.49 (1339) p<.001	.35	.09
Iterated Factors	101.717 (89) p=.17	.95	.05

The chi square goodness of fit tests the hypothesis that the sample data come from a population with the hypothesized structure. A small, statistically non-significant chi square, would suggest that the hypothesized structure fits the sample data quite well. Neither the Coopersmith nor the Exploratory model come even close to defining an adequate solution with the chi-square values.

Bentler and Bonett (1980) have suggested a fit index. This index ranges from zero, poorest possible fit, to unity, a perfect fit. They suggest that an index greater than .90 is indicative of a good fit of the associated sample data to the hypothesized model. Neither the Coopersmith nor the Exploratory model are even close to an acceptable Bentler-Bonnett index.

For each entry of the sample correlation matrix the difference between it and its estimated value, based on the hypothesized model, is computed This residual is then treated as an unsigned number and averaged. The smaller the average absolute residual the better the hypothesized model fits the sample data. Both the Exploratory and the Coopersmith model define comparable, but none-the-less unacceptable, fits by this criterion.

Stage 3. Originally it was anticipated that the confirmatory analyses would confirm either the hypothesized Coopersmith or the hypothesized Exploratory as fitting the data. Clearly, the hypothesized models do not fit the data well at all. Preliminary work with confirmatory analyses has suggested that it is possible to obtain a rough measure of how well a particular variable is working in a confirmatory model by studying the

average residual for the variable. In particular, the larger the average residual associated with a particular variable "the poorer the fit of the variable to the model". However, one must be careful when using this approach since it is possible for one variable to make several other variables "look bad". By systematically eliminating variables with large average absolute residuals it is possible to improve the fit of a hypothesized model. Of course the hypothesized model also changes. When using this approach it is important to understand that one does not shift the variables "willy-nilly" from factor to factor, rather a variable is eliminated from the analysis. In the situation where the variable space collapses one simply combines the remaining variables from the two factors into a single factor.

Comparing the chi square and Bentler-Bonnett fit index for the exploratory model and the Coopersmith model it appears that the Coopersmith model is the better of the two models, but still a very poor model. Using this modification approach with the Coopersmith model as a starting point a total of 15 passes, iterations, were required with a total of 42 variables being eliminated from the data set. The iterations were terminated when the Bentler-Bonett index surpassed .90 and when the associated chi-square became non-significant, $p>.05$. The results of these iterations, the 15 remaining variables, are summarized in Table 3. The measures of fit asociated with this solution, iterated factors, are reported in Table 2. These indices are all extremely high, thereby suggesting that the associated hypothesized structure fits the data very well.

Table 3 Item content of the two factors identified by iterated confirmatory factor analysis (n=132) of the original Coopersmith's factors.

Factor	item content by order of magnitude of loading*
Coopersmith Factors	
general self	3,12,17,52,42,30,15,37,49,39,1
social self-peers	-gone-
home / parents (self concern)	9,22,16,-6
school / academic	-gone-
lie	-gone-

* largest loading to lowest loading

Brief Discussion

In an effort to refine the fit of the Coopersmith model to the empirical data three of the original Coopersmith factors have been eliminated. All but two of the school academic items were eliminated, and then the factor space collapsed with the two remaining school academic items (12, 37) merging with the general self factor. All of the items associated with social self were eliminated with the exception of item 49 which also was merged with the general self factor when the factor space collapsed a second time. All of the lie items and all of the school/academic items were eliminated. The two remaining factors are briefly discussed in the following two paragraphs.

General Self. This is the stronger of the two remaining factors. The adolescent with a positive score on this factor feels that it is pretty tough to be me (30), prefers to be the other gender (37) and wishes to be someone else (3). This same respondent also gets upset easily at home (12) and often feels upset at school (42), probably because they get upset easily when scolded (52). Maybe this is why they like to be alone (39) and spend a lot of time daydreaming (1). This same positive respondent also feels as though they always have to be told what to do (15) and maybe that's why they think that their teacher makes them feel as though they are not good enough (49). Finally this positive respondent to the general self factor is often sorry for the things that they do.

Self Concern. This factor is only defined by four items. While his factor was originally defined as home and parents the item content that remains does not deal with home and parents. Rather it deals more with those aspects of the self that the adolescent doesn't like.The adolescents with a positive score on this factor feels that there are a lot of things about themselves that they would change if they could (9). Generally these positive respondents are unsatisfied with themselves and worry a great deal (6) because they give in very easily (22) and take a long time to get used to anything new (16).

This modification of the Coopersmith Child Measure of Self Esteem instrument needs to be investigated further. It provides an excellent fit to the data and may very well be the basis for an alternative, short form, Child Measure of Self Esteem. To the extent that our 132 respondents were typical of young adolescents and too the extent that our items and the factors associated with them reflect the current concerns and

values of today's adolescents as they impact on self-esteem, we may have defined a valid shortened version of the Coopersmith instrument for children. Because of the *ad hoc* nature of our approach to the model there needs to be additional theory development before the instrument can "stand alone". Whether this new instrument will provide more precise descriptions of adolescent self-esteem than the Coopersmith adult form remains to be seen. Educators are interested in the growth and development of adolescents. This instrument may help educators and researchers define important areas of concern for adolescent development. It should help understand the construct of self-esteem as it is defined by adolescents. Presently we view this instrument as an evolving research tool.

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Measuring Adolescent Self-Esteem: Construct Validity

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Abstract

The major objective of this study was to develop a measure of adolescent self-esteem. Seventeen incomplete sentences were derived from the Coopersmith Adult Self-Esteem instrument. The sentences dealt with such topics as home, school, social events, family, friends, teachers and life problems. Adolescents were instructed to complete the sentences. From the completed sentences 31 statements were derived as the basis for adolescent self-esteem.

Responses to the 31 statements were solicited from 115 adolescents between the ages of 16 and 18. The respondents were asked to evaluate the statements according to a 10 category response format ranging from very true to very false. Factor analyses of the data defined e even factors. However, confirmatory analysis suggested that the data did not fit the eleven factor hypothesized structure derived from the exploratory analysis. Subsequent iterative procedures refined the instrument into a 16 item self-esteem instrument whose hypothesized structure defined an excellent fit for the data.

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Background

The age between childhood and adulthood, adolescence, is a period characterized by rapid physiological and social development. The changes which take place during adolescent development influence feelings of self-esteem. The adolescents' self evaluation is based upon their perception of how well they are meeting the demands of adolescence.

The measurement of individuals' feelings of self worth requires an instrument sensitive enough to allow accurate reporting. The most accurate reflection of these feelings is made when the examinee does not feel threatened by the situation or judged by the examiner for his responses. A self report instrument facilitates accuracy by eliminating these obstacles (Wylie, 1974, p. 39).

There are certain identifiable behaviors and feelings for any group of individuals which are related to positive or negative self-esteem. Not only are the presence or absence of these behaviors and feelings important in the interpretation of how well the individual feels about himself, but also, the intensity is an important consideration. The behaviors and feelings which are important to any given group of individuals are those which deal with specific concerns of that group. For adolescents, physiological and social concerns are very relevant.

The Coopersmith Self-esteem Inventory is a widely utilized measure of self-esteem for school age children and adults. The adult form is considered appropriate for ages 16 through adulthood. It consists of twenty-five items that can be categorized by content into the areas of home, social, and work. Coopersmith proposed that the individual's perceptions of successes, values, aspirations, and defenses influence self-esteem. Successes are ascribed some value depending upon their saliency to the individual's personal goals and aspirations. The defenses function as the interpreters of life events, perceiving the self in more or less accurate terms. He further reports that success, although defined individually, can be appraised utilizing general statements which might be considered successes according to group values. These statements would deal with judgments of the self (Coopersmith, 1967).

Although individuals may value anything they wish, Coopersmith's findings suggest that "the similarity of value preferences in spite of manifest differences in capacity and achievement suggests that the value preferences that people actually

employ are those that are generally espoused by their group, rather than those that they may dwell upon in their private and fantasy experiences" (Coopersmith, 1967, p. 244).

Self-esteem can be assessed using statements which deal with the kinds of behaviors and qualities that are considered valuable to the social group of which the individual is a member. The individual perceives himself and compares his perception to goals and aspirations which are either public or private. Coopersmith's findings (1967) suggest that for persons with either high or low self-esteem, public aspirations are similar, however, individuals with high self-esteem select higher personal aspirations for themselves than people with low self-esteem.

Coopersmith (1967) speaks of defenses as the "ability to resist or reject devaluating stimuli and events, and hence permit the individual to maintain the conviction that he is powerful, capable of dealing with adversity, and successful" (Coopersmith, 1976, p. 248). Defenses are vital to maintenance of self-esteem. Individuals with high self-esteem may have defenses which are more effective at protecting them from distress and threatening stimuli.

There are 25 items on the **Coopersmith Self-esteem Inventory, Adult Form**. This form is intended for use with adolescents and adults. The student is required to check if the statement is "like me" or "unlike me." Each statement is very general, such as, "Things usually don't bother me" and "I can't be depended on." While this instrument may validly assess self-esteem in adolescents, an instrument with items that are more directly related to adolescent development, should yield an even more valid estimate. Coopersmith has presented a basis for the item content by suggesting the effect of social influences upon valued personal qualities and characteristics. Item content should deal with behaviors and characteristics which are important to the social group to which the individual belongs. The content of items on an instrument intended for use with adolescents should, therefore, relate to the salient concerns of adolescent growth and development.

The adolescent would be represented by the lower age extreme for the Coopersmith adult version of self-esteem. However, the adult version was not explicitly intended for adolescents. The major objective of this study was to derive an adolescent measure of self-esteem using Coopersmith's instrumentation for general guidelines. This manuscript reports progress toward the development of an instrument

to measure adolescent's feelings of self worth. The content areas of the instrument were focused on specific, identified adolescent developmental concerns. These concerns were identifiable through a self report by adolescents of behavior and feelings related to these areas.

It was expected that the expression of self-esteem in adolescence would be related to specific behaviors and feelings which are associated with adolescent developmental issues. These social, emotional, and physiological concerns are important to adolescent development and are manifested differently in adolescence that in either childhood or adulthood. It was also expected that these different feelings could be reflected in item content areas which are related to identified concerns of adolescence.

Methodology

Instrument Construction

The measurement of individuals' feelings of self-worth requires a device through which feelings can be accurately reported. The most accurate reflection of these feelings is made when the examinee does not feel threatened by the situation or judged by the examiner for his responses. A self-report instrument would facilitate accuracy by eliminating these obstacles.

Seventeen incomplete sentences were developed from the Coopersmith (1967) Adult Self-Esteem instrument (see Appendix A for a listing of the incomplete sentences). These incomplete sentences were intended to solicit information regarding adolescent concerns and issues regarding: home, school, social events, family, friends, teachers and life problems. Adolescents between the ages of 16 and 18 provided written responses to the statements and encouraged to ask questions privately.

The students' responses were compiled according to item number and gender of respondent. Responses were analyzed for content. Similar responses were combined to formulate one or two items. When responses such as "always" and "never" were prevalent, the item remained the same, since these were the kinds of responses expected on the final self-esteem instrument. Unique responses, if not situationally or personally specific, were retained. Nonsense and specific personal responses were eliminated. The final instrument consisted of 31 complete statements

with a ten category forced choice response format ranging from very true to very false. These 31 statements are reported as Appendix B.

Data Source.

The initial incomplete sentences were responded to by a somewhat arbitrary sample of 18 eleventh grade adolescents: eleven males and seven females between the ages of 16 and 18 years. A larger sample of 115 eleventh and twelfth grade students, 50 males and 65 females, responded to the 31 complete statements. The larger sample also ranged in age from 16 to 18.

Analyses and Results

The data analyses were initially viewed as a two stage process. Stage 1 of the analyses was an exploratory factor analysis. Stage 2 of the process was a confirmatory factor analysis. However, there was a stage 3 in these analyses. This third stage should be referred to as model modification.

Stage 1. The data defined a 32x32 intercorrelation matrix. This matrix was analyzed using an oblique principal components analysis (Feldman, Gagon, Hofmann and Simpson, 1988). The number of factors retained, eleven, was determined by the number of roots greater than one. These factors accounted for approximately 68 percent of the total variance. Those variables with reference structure values greater in absolute value than .30 were retained as definitive of the factor associated with the loading. The factors are summarized by item content in Table 1. The following eleven named factors were defined: Self-Esteem in the Family (10 items), Personal Self-Esteem (9 items), Self-Esteem Amongst Peers (7 items), Self-Esteem in Problem Situations (7 items), Self-Esteem Defense Mechanisms (6 items), Self-Esteem in Social Situations (8 items), Submission to Others (gender related with 4 items), Self-Esteem as a Leader (6 items), Self-Esteem with Peers (gender related 4 items), Academic Self-Esteem (7 items), Introversion (gender related 2 items).

Table 1 Item content of eleven factors identified by exploratory factor analysis (n=115).

Factor	item content in order of loading magnitude*
family relations	3,18,-19,6,31,7,-8,2l,14,15
personal pride	28,25,2,31,14,29,21,-1,18
self as others see me	17,23,31,29,14,-27,-5
anxiety	12,5,-2,1,16,-29,24
defenses	15,8,26,-21,14,-29
social	16,22,10,27,12,-29,-2,-7
submission	30,13,29,22
loyal follower	20,27,24,6,19,-7
supportive/cooperative relationships	9,7,-10,23
career preparation	4,-21,1,24,18,-28,-2
introvert	11,-10,

*ordered from largest to smallest in terms of magnitude

Stage 2. The second stage of the analyses is a confirmatory factor analysis intended to test the adequacy of the fit of the exploratory solution to the empirical data.The confirmatory factoring method used in this study is a maximum likelihood estimation method within the context of Bentler's (1985) EQS algorithm. This algorithm is based upon new developments in statistical theory that are robust to violations of multivariate normality. This EQS algorithms fit a model to a set of data and then provide the fitted model and summary statistics indicative of how well the model fits the data set. For this study the model fitted is the exploratory factor solution. The model may be thought of within the context of Table 1. For example, the items of Table 1 associated with the first factor, **family relations**, were assumed to define the factor in the confirmatory model. For each factor in Table 1 the associated items were used to define the factor in the confirmatory analysis. Some variables were used in the definition of more than one confirmatory factor. This is not a problem as the intention of this stage of the analysis was one of determining how well the confirmatory model fit the empirical data. Three measures of fit were computed: chi-square goodness of fit, Bentler-Bonett fit index, and average absolute residual.

The chi square goodness of fit tests the hypothesis that the sample data come from a population with the hypothesized structure. A small, statistically non-significant chi square, would suggest that the hypothesized structure fits the sample data quite well. For the hypothesized structure associated with Table 1 the chi square value is

715.45 with 399 degrees of freedom. This is a very large chi square that is statistically significant ($p<.001$).

Bentler and Bonett (1980) have suggested a fit index. This index ranges from zero, poorest possible fit, to unity, a perfect fit. They suggest that an index greater than .90 is indicative of a good fit of the associated sample data to the hypothesized model. For the hypothesized structure associated with Table 1 the Bentler-Bonett fit index is .60, suggesting an inadequate fit.

For each entry of the sample correlation matrix the difference between it and its estimated value, based on the hypothesized model, is computed This residual is then treated as an unsigned number and averaged. The smaller the average absolute residual the better the hypothesized model fits the sample data. For the hypothesized model associated with Table 1 the average absolute residual is .0799. This number is difficult to judge, but one would hope that the residuals would be less than this one.

Stage 3. Originally it was anticipated that the confirmatory analyses would confirm the hypothesized factor structure derived from exploratory factor analyses. Clearly, the hypothesized model does not fit the data well at all. Preliminary work with confirmatory analyses has suggested that it is possible to obtain a rough measure of how well a particular variable is working in a confirmatory model by studying the average residual for the variable. In particular, the larger the average residual associated with a particular variable "the poorer the fit of the variable to the model". However, one must be careful when using this approach since it is possible for one variable to make several other variables "look bad". By systematically eliminating variables with large average absolute residuals it is possible to improve the fit of a hypothesized model. Of course the hypothesized model also changes. When using this approach it is important to understand that one does not shift the variables "willy-nilly" from factor to factor, rather a variable is eliminated from the analysis. In the situation where the variable space collapses one simply combines the remaining variables from the two factors into a single factor.

Using this approach with approximately 16 passes, iterations, a total of 15 variables were eliminated from the data set. The iterations were terminated when the Bentler-Bonett index surpassed .90 and when the associated chi-square became non-significant, $p>.05$. The results of these iterations, the 16 remaining variables, are summarized in Table 2.

Table 2 Item content of remaining exploratory factors confirmed by maximum likelihood methods within EQS (n=110).

Factor	item content in order of loading magnitude*
family relations	-18,15,19
personal pride	31,2,14, 25,28
self as others see me	17,23
anxiety	-gone-
defenses	-gone-
submission	-gone-
loyal follower+social	27,-7,22,10,12,30
supportive/cooperative relationships	-gone-
career preparation	-gone-
introvert	-gone-,

*ordered from largest to lowest in terms of magnitude

There are striking differences between the three summary indices. The chi square goodness of fit test defines a chi square value of 118.632 with 98 degrees of freedom. This chi square is **not** significant, p>.08, thereby suggesting that the sample data come from a population associated with the structure as defined in Table 2. It is important to note that the sample data have been reduced by 15 variables. The Bentler-Bonett index is now .93, suggesting a very good fit between the sample data and the hypothesized structure. Finally, the average absolute residual is approximately .04, about one-half the size of the average absolute residual associated with the original exploratory solution.

Brief Discussion

While there are not a lot of variables remaining in the modified instrument four of the original eleven factors have remained more or less the same. A brief description of each factor follows.

Family Relationships. The content of the three loadings (-18, 15, 19) suggest this factor deals with getting along with one's family. Adolescents who feel that they are not understood (-18) feel that their families expect too much from them (15) and they think about running away.

Personal Pride. The content of the five variables loading on this factor (31,2,14,25,28) indicate that this is a personal pride factor. The adolescents who feels that they are valuable people (31) also like their appearances (2) and feel that they usually do what they think is right (14). They also feel that they are pretty good at something (28) and that some of the things that they have done make them proud (25).

Self as Others See Me: This factor is only defined by two items (17,23). This factor deals with the interest and support of friends. The adolescent responding positively to this factor feels that others are interested in what he or she has to say (17) and that their friends are supportive of them (23).

Loyal Follower, Social and Submission: This factor is a combination of three exploratory factors that collapsed together and is defined by six items (27,-7,22,10,12,30). The adolescent responding positively to this factor finds it difficult to talk in front of adults (-7) as well as in front of a class (10). This person also worries about what others think (12) and gets upset when a friend talks to another person (27). This same adolescent is disappointed in school performance (22) and feels that they give in too easily to friends (30).

This instrument should be viewed as an evolving research tool. It provides an excellent fit to the data and may very well be the basis for a new adolescent self-esteem instrument. To the extent that our sample of 18 adolescents were typical our items and the factors associated with them reflect the current concerns and values of today's adolescents as they impact on self-esteem.

Whether this new instrument will provide more precise descriptions of adolescent self-esteem than the Coopersmith adult form remains to be seen. Educators are interested in the growth and development of adolescents. This instrument may help educators and researchers define important areas of concern for adolescent development. It should help understand the construct of self-esteem as it is defined by adolescents. Presently we view this instrument as an evolving research tool.

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Appendix A.
Incomplete Sentences

Male_____ Female_____

1. Things that usually bother me are _____.
2. It is difficult for me to talk in front of _____.
3. At home I get upset about _____.
4. At school I get upset about _____.
5. At social events I get upset about _____.
6. I give in very easily _____.
7. My family expects too much of me _____.
8. My friends expect too much of me _____.
9. My teachers expect too much of me _____.
10. The things that are mixed up in my life are _____.
11. When I express an idea, other people _____.
12. Sometimes I think about running away _____.
13. My family understands me _____.
14. My family pressures me _____.
15. I often get discouraged because _____.
16. I wish I _____.
17. Write you own statement _____.

Appendix B

This questionnaire is intended to assess how adolescents feel about themselves. There are no right or wrong answers. Your response to each statement should reflect your own feelings. All responses will be held in confidence.

For each statement, you have been provided 10 choices. The following choices will be available:

A Very true
B
C Moderately
D
E Slightly true

F Slightly false
G
H Moderately false
I
J Very false

In order to report your feelings accurately, please refer to these categories as often as needed.

Notice the letters B, D, G, I, have no descriptors after them. They simply represent alternatives midway between either strong and moderate feelings or moderate and slight feelings. Please use these choices if they indicate your feelings about any statement.

Before beginning the items, please fill in the areas on your computer sheet for your name, birthdate, and gender.

1. Grades are a source of worry for me.
2. I like my appearance.
3. My parents and I get along very well.
4. My teachers bother me.
5. I worry about my relationships with my friends.
6. My brothers and sisters and I get along well.
7. It is easy for me to talk in front of adults.
8. My social life is too restricted.
9. My friends and I enjoy our time together.
10. It is difficult for me to talk in front of the class.
11. I enjoy being alone.
12. What others think of me worries me.
13. I give in very easily to adults.
14. I usually do what I think is right.
15. My family expects too much of me.
16. Relationships with opposite gender peers are confusing to me.
17. Other people are interested in what I have to say.
18. My family understands me.
19. I think about running away.
20. Choosing values confuses me.
21. My teachers have realistic expectations of what I can and cannot do.
22. My performance in school disappoints me.
23. My friends are supportive of me.
24. My feelings about a career decision confuse me.
25. Some things I have done make me feel proud.
26. At home I have too many responsibilities.
27. When a friend talks to another person I get upset.
28. I am pretty good at something.
29. Other people think I am attractive.
30. I give in very easily to my friends.
31. I am a valuable person.

APPENDIX C

Piers/Harris Self-Concept Scale

A = ALWAYS TRUE
B = USUALLY TRUE
C = SOMETIMES TRUE / SOMETIMES FALSE
D = USUALLY FALSE
E = ALWAYS FALSE

1. My classmates make fun of me
2. I am a happy person
3. It is hard for me to make friends
4. I am often sad
5. I am smart
6. I am shy
7. I get nervous when the teacher calls on me
8. My looks bother me
9. When I grow up, I will be an important person
10. I get worried when we have tests in school
11. I am unpopular
12. I am well behaved in school
13. It is usually my fault when something goes wrong
14. I cause trouble to my family
15. I am strong
16. I have good ideas
17. I am an important member of my family
18. I usually want my own way
19. I am good at making things with my hands
20. I give up easily
21. I am good in my school work
22. I do many bad things
23. I can draw well
24. I am good in music
25. I behave badly at home
26. I am slow in finishing my school work
27. I am an important member of my class
28. I am nervous
29. I have pretty eyes
30. I can give a good report in front of the class
31. In school I am a dreamer
32. I pick on my brother(s) and sister(s)
33. My friends like my ideas
34. I often get into trouble
35. I am obedient at home
36. I am lucky
37. I worry a lot
38. My parents expect too much of me
39. I like being the way I am
40. I feel left out of things

A = ALWAYS TRUE
B = USUALLY TRUE
C = SOMETIMES TRUE / SOMETIMES FALSE
D = USUALLY FALSE
E = ALWAYS FALSE

41. I have nice hair
42. I often volunteer in school
43. I wish I were different
44. I sleep well at night
45. I hate school
46. I am among the last to be chosen for games
47. I am sick a lot
48. I am often mean to other people
49. My classmates in school think I have good ideas
50. I am unhappy
51. I have many friends
52. I am cheerful
53. I am dumb about most things
54. I am good looking
55. I have lots of pep
56. I get into a lot of fights
57. I am popular with boys
58. People pick on me
59. My family is disappointed in me
60. I have a pleasant face
61. When I try to make something, everything seems to go wrong
62. I am picked on at home
63. I am a leader in games and sports
64. I am clumsy
65. In games and sports, I watch instead of play
66. I forget what I learn
67. I am easy to get along with
68, I lose my temper easily
69. I am popular with girls
70. I am a good reader
71. I would rather work alone than with a group
72. I like my brother (sister)
73. I have a good figure
74. I am often afraid
75. I am always dropping or breaking things
76. I can be trusted
77. I am different from other people
78. I think bad thoughts
79. I cry easily
80. I am a good person

APPENDIX D

Multi-dimensional Multi-attributional Causality Scale

A = ALWAYS TRUE
B = USUALLY TRUE
C = SOMETIMES TRUE / SOMETIMES FALSE
D = USUALLY FALSE
E = ALWAYS FALSE

101. When I receive a poor grade, I usually feel that the main reason is that I haven't studied hard enough.
102. My enjoyment of a party or free-play time almost entirely depends on the kinds of kids who are there.
103. If I were to receive low grades, it would make me to question just how smart I am.
104. Making friends is a funny business; sometimes I have to chalk up making friends to luck.
105. If I did not get along well with others, it would tell me that I hadn't put much effort into being friendly.
106. Some of the times that I have gotten a good grade in a course, it was because the teacher was an easy greater.
107. It seems to me that when people don't like me its because I don't know how to get along with others.
108. Sometimes my success on tests depends on some luck.
109. In my case, the good grades I receive are always because of how hard I work at it.
110. No matter what I do, some people just don't like me.
111. The most important ingredient in getting good grades is how smart I am.
112. Often unknown events can play a large part in causing problems between friends
113. Keeping friends takes a lot of hard work.
114. In my experience, once a teacher gets the idea you're a poor student, your work is much more likely to receive poor grades than if someone else handed it in.
115. It seems to me that getting along with people is a skill.
116. Some of my lower grades have seemed to be partially due to bad luck.
117. When I fail to do as well as expected in school, it is often due to a lack of effort on my part.
118. Some people can make me have a good time even when I don't feel like having a good time.
119. If I were to fail a course it would probably be because I wasn't smart enough in that area.
120. In my experience, making friends is largely a matter of having the right luck.
121. When I hear about two friends who break up, I usually think that they probably did not try enough to make their friendship work.
122. Some of my good grades may simply reflect that these classes were easier than most.
123. I feel that people who are often lonely are lacking in the ability to make friends.
124. I feel that some of my good grades depend to a considerable extent on luck, such as having the right questions show up on an exam.

A = ALWAYS TRUE
B = USUALLY TRUE
C = SOMETIMES TRUE / SOMETIMES FALSE
D = USUALLY FALSE
E = ALWAYS FALSE

125. Whenever receive good grades, it is always because I have studied hard for that class.
126. Some people just naturally dislike me.
127. I feel that my good grades depend on how smart I am.
128. I find that not having many friends is often a matter of not being lucky enough to meet the right people.
129. In my case, success at making friends depends on how hard I work at it.
130. Often I get poorer grades in courses where the teacher does not make the class very interesting.
131. Having good friends is simply a matter of how good one is at making friends.
132. My low scores on tests sometimes make me think I was just unlucky.
133. Poor grades tell me that I haven't worked hard enough.
134. To enjoy myself at a party I have to be around others who know how to have a good time.
135. If I were to get poor grades I would seem to me that I wasn't smart enough in those classes.
136. If I had a long, happy friendship with someone, I'd say I must just be very lucky.
137. In my experience, loneliness comes from not trying to be friendly.
138. Sometimes I get good grades only because the class material was easy to learn.
139. In my experience you don't have friends when you don't know how to be friendly.
140. Sometimes I feel that I have to consider myself lucky for the good grades I get.
141. I can overcome all problems in doing well in school work if I only work hard enough.
142. It is almost impossible to figure out how I have made some people mad at me.
143. When I get good grades, it is because I am naturally good at school work.
144. Difficulties with my friends often start with chance remarks.
145. If my friendships are to succeed, it would have to be because I worked at it.
146. Some low grades I've received are because teachers simply do not give out very many good grades.
147. It is impossible for me to be good friends with people who are not as patient and good at dealing with people as I am.
148. Some of my bad grades may have been because of bad luck, being in the wrong class at the wrong time.